

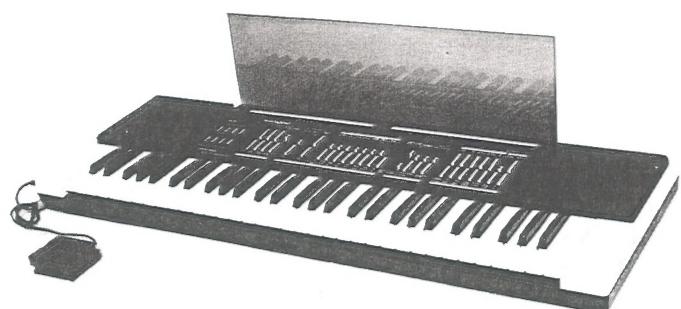
JVC

SERVICE MANUAL

MODEL

KB-700 B/N/H

ELECTRONIC KEYBOARD



No. 6516
June 1983

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Specifications

| Item | Description | | |
|----------------------------|--|--|-----------------------------------|
| Sound source | 2 master sound sources Solo preset : Monophonic system Orchestra preset: 8-note polyphonic system | | |
| Keyboard | 61 keys (C2 ~ C7; 5 octaves) | Mode | Accompany- ment |
| | | Key split FULL | 0 61 |
| | | Key split 1 | Left 19 Right 42 |
| | | Key split 2 | Left 24 Right 37 |
| Solo synthe. preset | Trumpet Guitar Solo keying | Pan flute | Synthe. tone |
| Orchestra preset | String ensemble Piano Organ Harpsichord Trumpet Vibraphone | Trombone Elec. piano Jazz organ Hawaiian guitar Clarinet Jazz flute | |
| Accompany- ment tone | Accomp. strings Bass | | |
| Effect | Magic foot (Sustain, Bend, Full-in), Presence control, Sustain lever (Base, Orchestra), Ultra-chord (Open, Off, Close), Stereo/Ensemble switch, Tremolo, Sustain switches | | |
| Stereo pan pot mixer | Pan pot: (1. Base, 2. Accom./Arpeggio, 3. Strings, 4. Orchestra, 5. Solo synthe./Mic.) Mixer: (1. Autorhythm, 2. Base, 3. Accom. 4. Arpeggio, 5. Accom. strings, 6. Orchestra, 7. Solo synthe.) | | |

| Item | Description |
|----------------------|--|
| Auto- rhythm | Rhythms: 14 patterns, Stereo rhythm ■ Waltz, Samba, ■ Polka/March, Bossanova, Rumba, Tango, Disco, Rock I, Rock'n roll, Legae, Swing, Rock II, Slow rock, Shaffle Rhythm tempo, Synchro-start, Intro. & Fill-in, Start & Stop Tact Beat conductor (4 LEDs) Tempo range ♩ = 45 ~ 280 |
| Fascinating chord | Normal, One-finger, Multi-finger, Chord memory Accomp. (Piano/Guitar), Arpeggio variation (3), Base variation (1, 2, 3, Auto-variation), Key split, Key transpuse |
| Compu- corder | Record (Chord/Base), Replay, 3 musics selector (up to 62 bars) |
| Other controls | Power switch, Total volume control, Solo synthe. pitch control (Solo pitch) Orchestra pitch control (Main pitch) |
| External | Expression pedal terminal Mic terminal (w/volume): -60 dB AUX OUT (Stereo pin jack): -6 dB Magic foot terminal (Magic foot is an accessory.) Headphone terminal |
| Max. output | 4 W + 4 W (AC) 2.5 W + 2.5 W (DC) |
| Power source | AC 240/220/110 V, 50/60 Hz DC 12 V (SUM1 cell x 8 – not provided) (Car battery – with CN332 adaptor*) |
| Power consumption | 29 W (Switch ON) 1.8 W (Switch OFF) |
| Battery life | 3 hours approx. (continuous operation/max. vol.) |
| Speaker | ø 14 cm x 2 |
| Other | Battery warning light (Power LED) |
| Dimensions | 950 mm(W) x 99 mm(H) x 330 mm(D) |
| Weight | 9.3 kg (without batteries) |
| Finish | 2-tone color (Black & white) with plastic case |

Safety Precaution

1. Make sure to use the specified parts for those marked with Δ symbol.
2. Return the clamp near the power supply to original position after servicing.
3. Disconnect the power before removing connectors of various units and circuit boards.
4. **IMPORTANT:** (Model KB-500B only)

The wires in the mains lead (power cord) are coloured in accordance with the following code:

| | |
|------------------|-----------|
| Green-and-Yellow | : Earth |
| Blue | : Neutral |
| Brown | : Live |

The wire which is coloured Green-and Yellow must be connected to the treminal in the plug which is marked by the letter E or by the safety earth symbol $\underline{\underline{E}}$ or coloured green or green-and-yellow.

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured blue or black.

The wire which is coloured Brown must be connected to the treminal which is marked with the letter L or coloured brown or red.

Features

- Variegated auto-accompaniment system by adopting the multi-functional microcomputer system.
- Compcorder memorizing chord and bases of 62 bars of 3 musics
- Key split switches over the accompaniment keyboard from a range to another.
- Easy transposing by use of the key transpose function.
- Stereophonic auto-rhythm.
- Pan pot mixer helps to make right and left sound images differently and free.

- Magic foot controls three kinds of effects.
- Solo synthe. presets and orchestra presets in the two master sound source system
- Solo synthe. presets with solo keying function thank to a quasi-synthesizer circuit system.
- Orchestra presets of 8-note polyphonic system

Main Parts Location

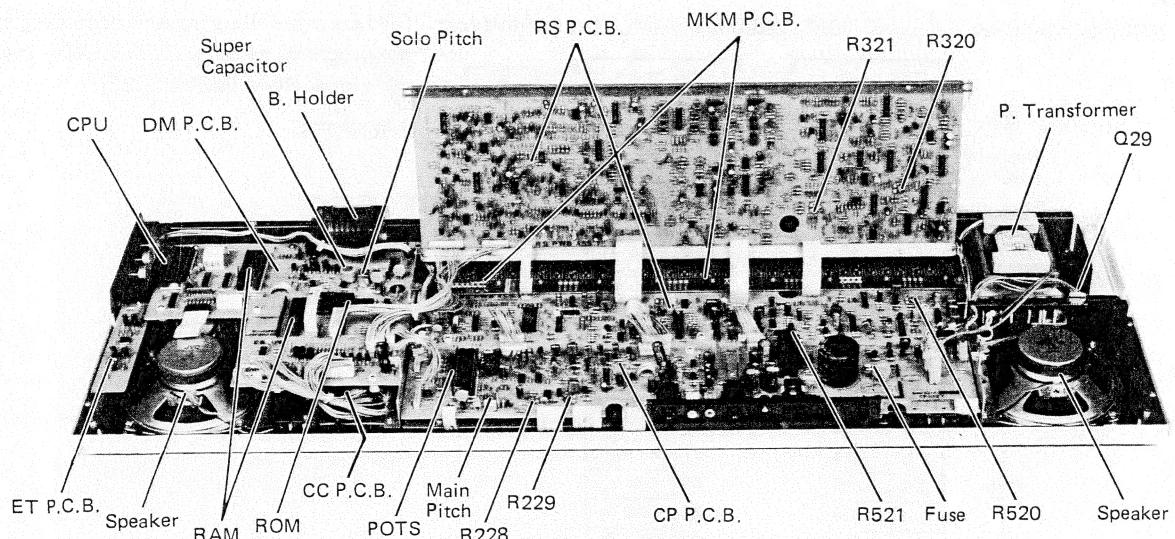


Fig. 1

Outline of Microcomputer in This Keyboard

1. Main functions of microcomputers

- Keying of orchestra presets (including sound source dividing function)
- Sound source dividing for solo presets
- Fascinating chord
- Auto-rhythm
- Selecting of presets and effects
- compucorder
- Key transpose
- Ultrachord
- Key split
- Turning on and off of LEDs

2. Block diagram

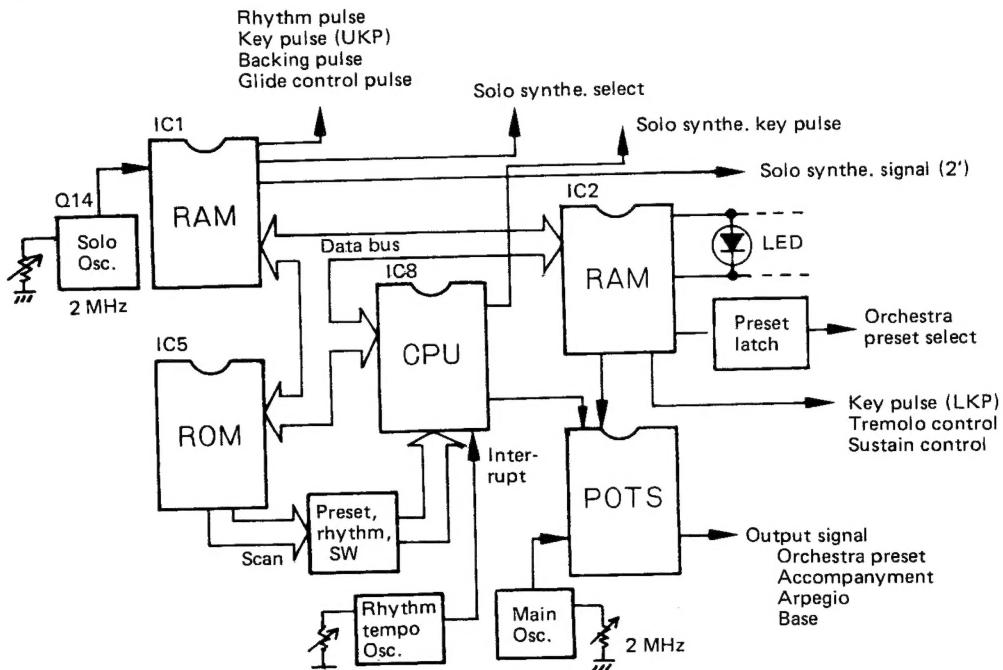


Fig. 2

3. IC terminals

■ CPU MSM80C49-40RS (2 K bites ROM, 128 bites RAM, 8-bit 1-chip type)

CPU controls all operations according to the programs of the built-in ROM and an additional ROM (MSM83C55).

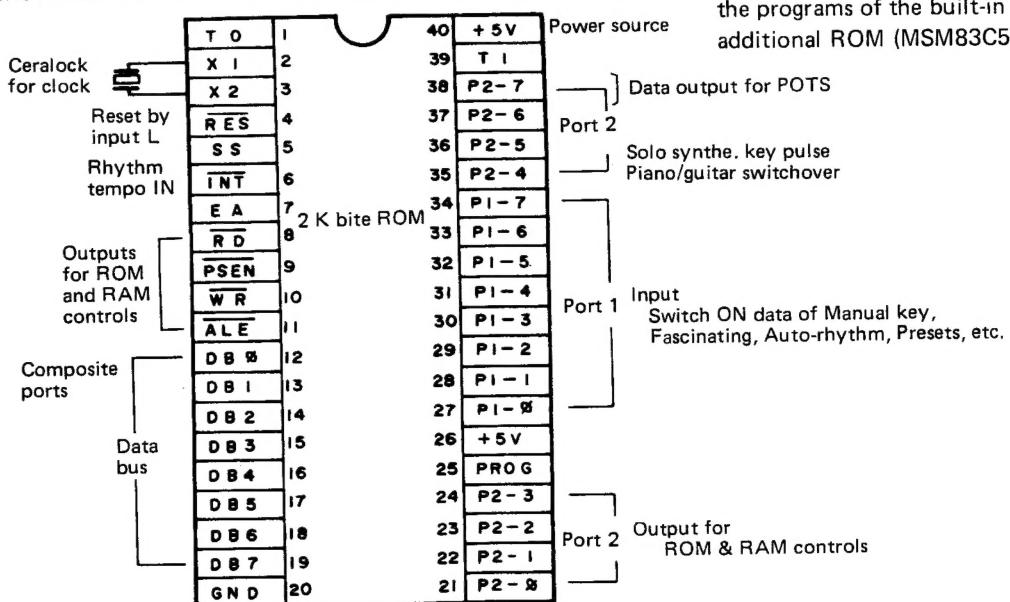


Fig. 3

■ Microcomputer scanning block diagram

The 14-bit binary code turned out from ports A and B of ROM (MSM83C55) scans every switch and enters into port 1 of CPU through the buffer, and CPU outputs various kinds of commands according to the information input.

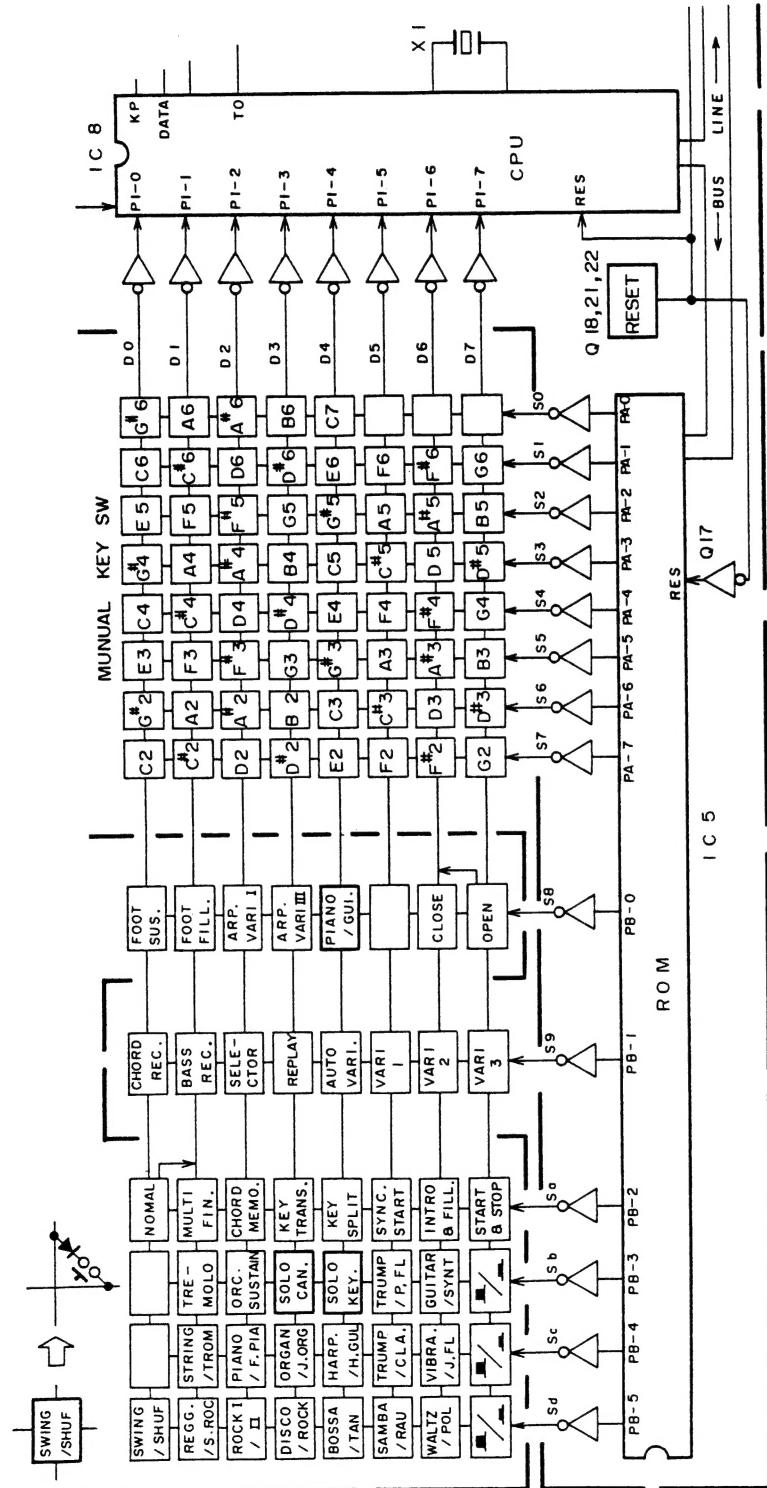


Fig. 4

■ ROM (MSM83055-18RS)

ROM memorizes all the program and also receives switching informations.

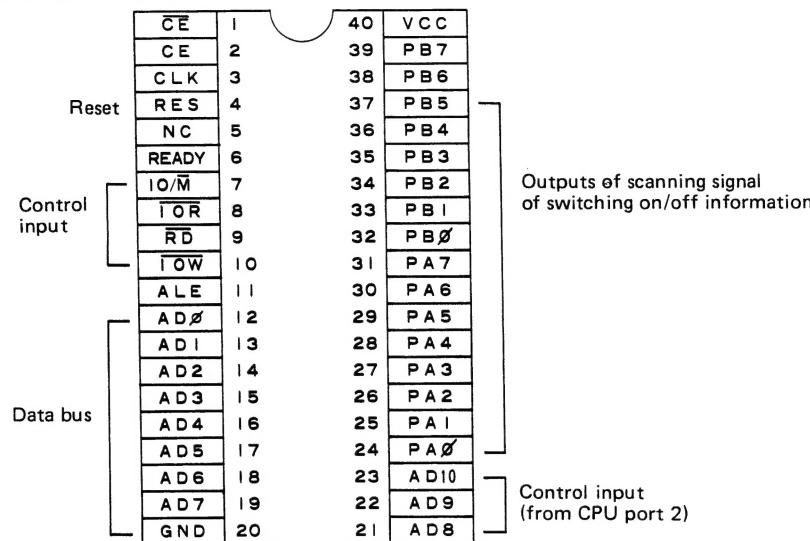


Fig. 5

■ RAM (MSM81C55RS)

RAM memorizes codes by CPU's control.
IC1 outputs the sound source of the solo
presets, rhythm pulse, key pulse and
signals for switching solo presets.
IC2 turns out signals for POTS data,
switching of orchestra presets, turning on
LEDs, etc.

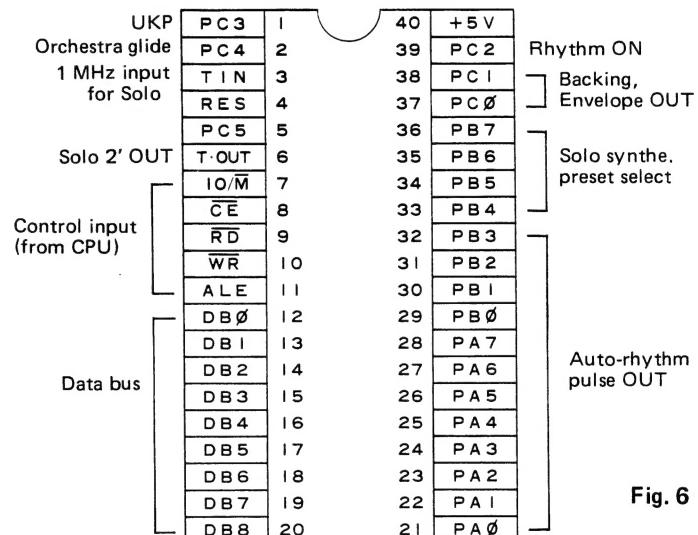


Fig. 6

IC2

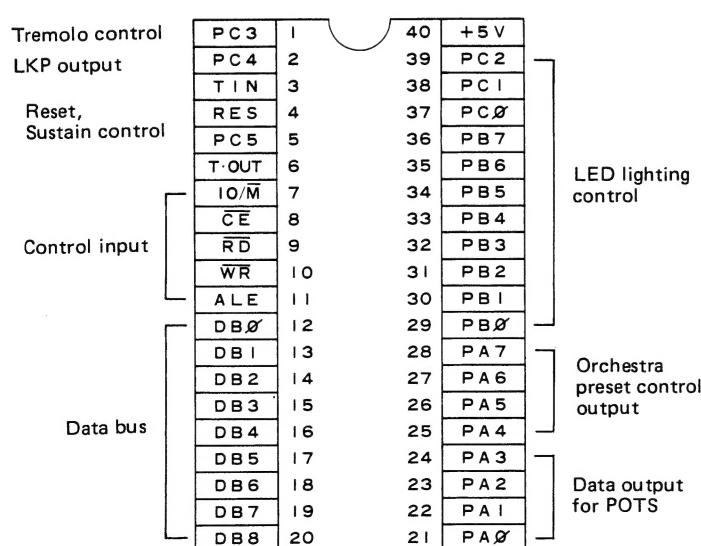


Fig. 7

■ POTS (VC4050B)

POTS is an LSI which generates the upper, lower and pedal tones (functions of dividing, keying, waveform conversion) in 1-chip, and its operation is done with digital 6-bit data sent from IC2 (ROM).

Terminals

Programmable organ tone synthesizer VC4050B

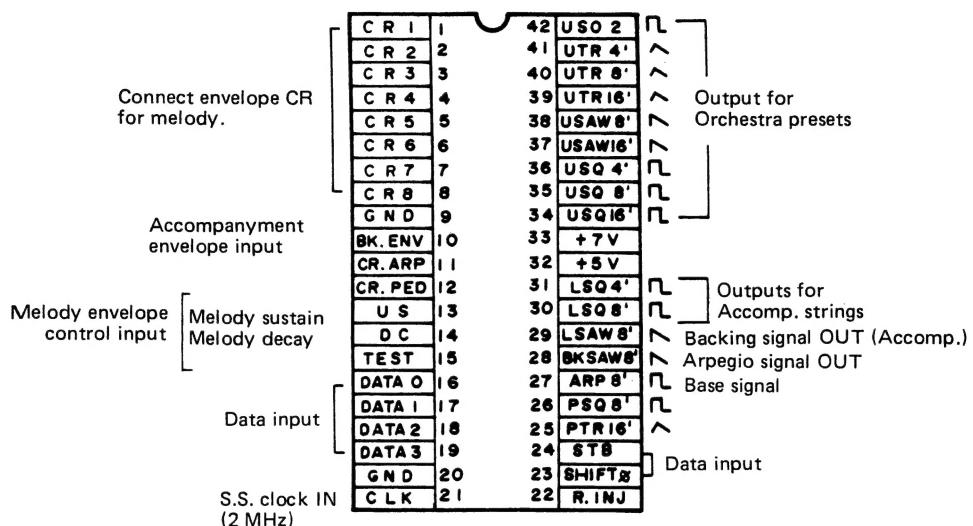


Fig. 8

■ Internal block diagram

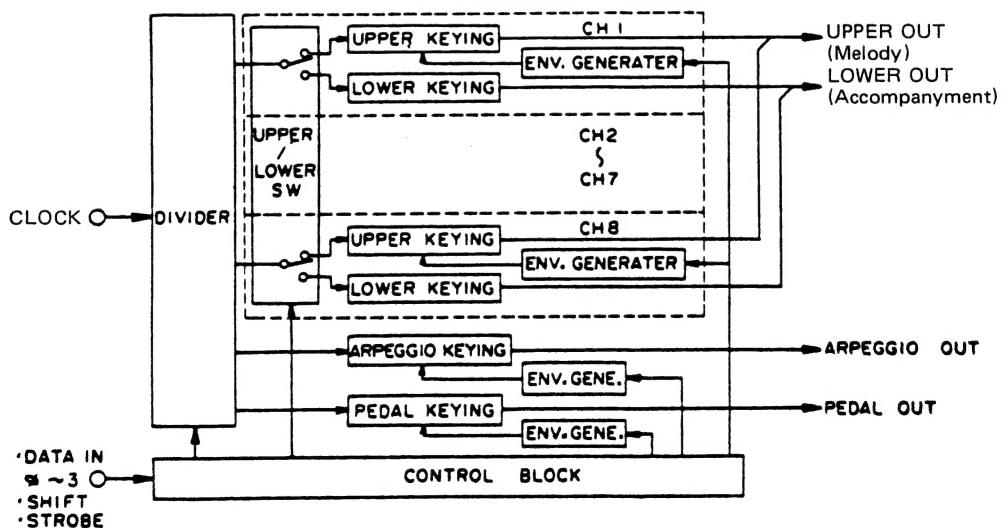


Fig. 9

Disassembly

1. Removal of the base cover

- 1) Remove the battery cover first, then take out batteries.
- 2) Remove 10 tapping screws A .
- 3) Remove 4 screws with washers B .
- 4) Remove 2 tapping screws C .
- 5) Remove the cover taking special care.

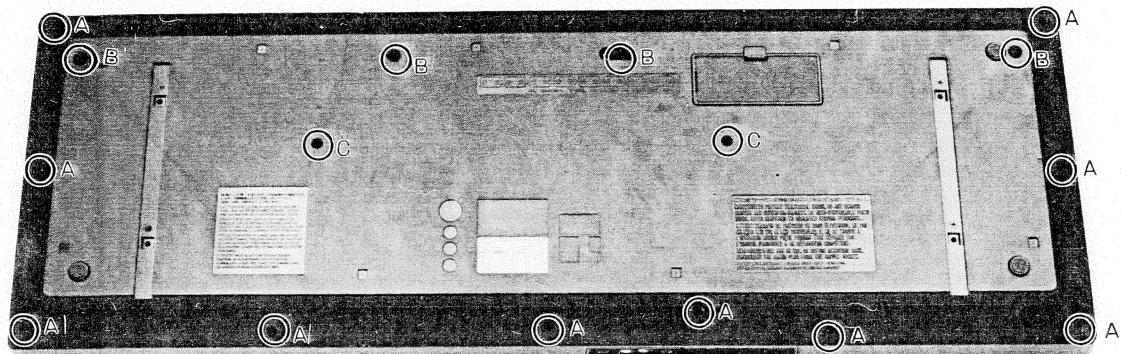


Fig. 10

2. Checking up voltages on the PC board

- In case of checking up almost all parts of boards except a part of the CP board, remove 4 screws fixing the RS board as shown in Fig. 1.
- When checking up the innermost part of the CP board, remove the board, transformer and battery holder first.



Fig. 11

Note: When re-assembling the boards and parts removed once, take great care not to make a mistake in applying screws. Screws for plastics have larger pitches while smaller pitches for steel goods.

3. Removal of volume control knobs and switch knobs

- 1) Knobs of volume controls can be removed by pulling outwards.
- 2) To remove switch knobs place the board as shown in Fig. 11 and push out them with a minus screwdriver or the like through the square hole of the board. When fitting knobs again, take care about colors of knobs. (Refer to page 19.)

4. Removal of PC board

Refer to Fig. 11. Remove 10 screws fixing switches in the hole of the CP board and 4 screws fastening the board. Slide volume control knobs can be removed by pulling the board upwards.

5. Removal of manual keys

1) After completion of the above item 4, remove 8 screws fastening the key chassis to remove the chassis.

2) Removal of key

Depressing the point C of the figure pull it in the direction of D to remove.

When removing a black key, first remove two white keys next to it and remove the black key in the same manner as for white keys.

3) Fitting of keys

Taking care about setting a coil spring on the projection of the key chassis, press the point E and insert the key into a square hole F.

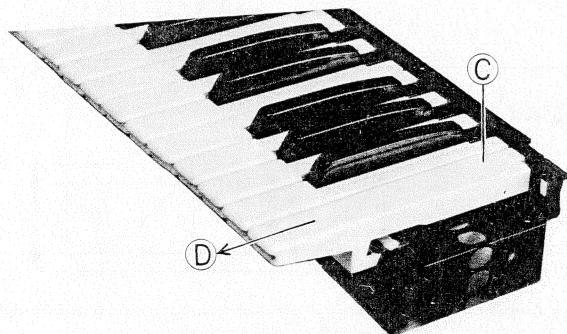


Fig. 12

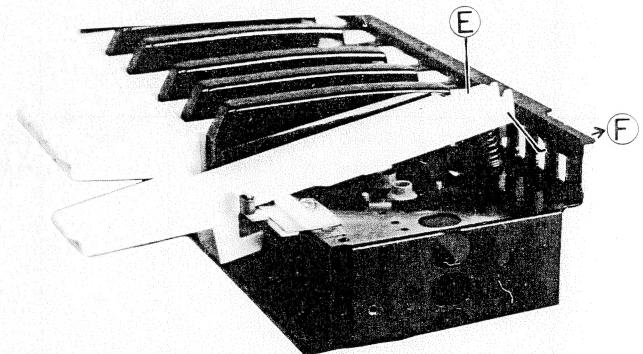


Fig. 13

6. Removal of the music stand (smoked cover)

Remove screws inside (see Fig. 14), and push the cover holder with a screwdriver and the like in the direction of the arrow mark (removal on one side only). After that stand the cover and it will be removed easily.

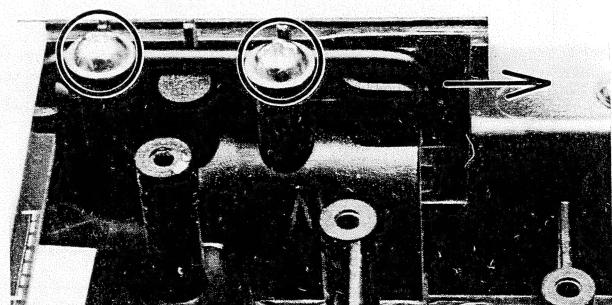
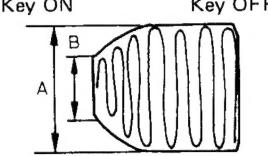
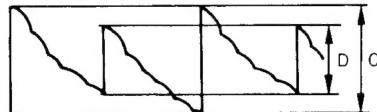
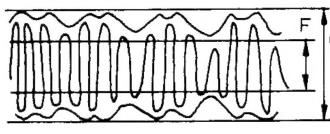


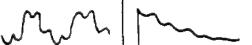
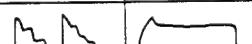
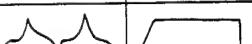
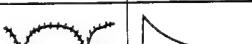
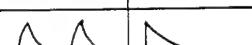
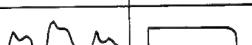
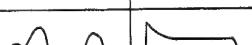
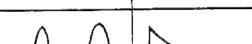
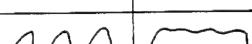
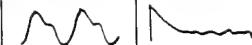
Fig. 14

Adjustment

Adjustments should be performed in the order of the numbers.

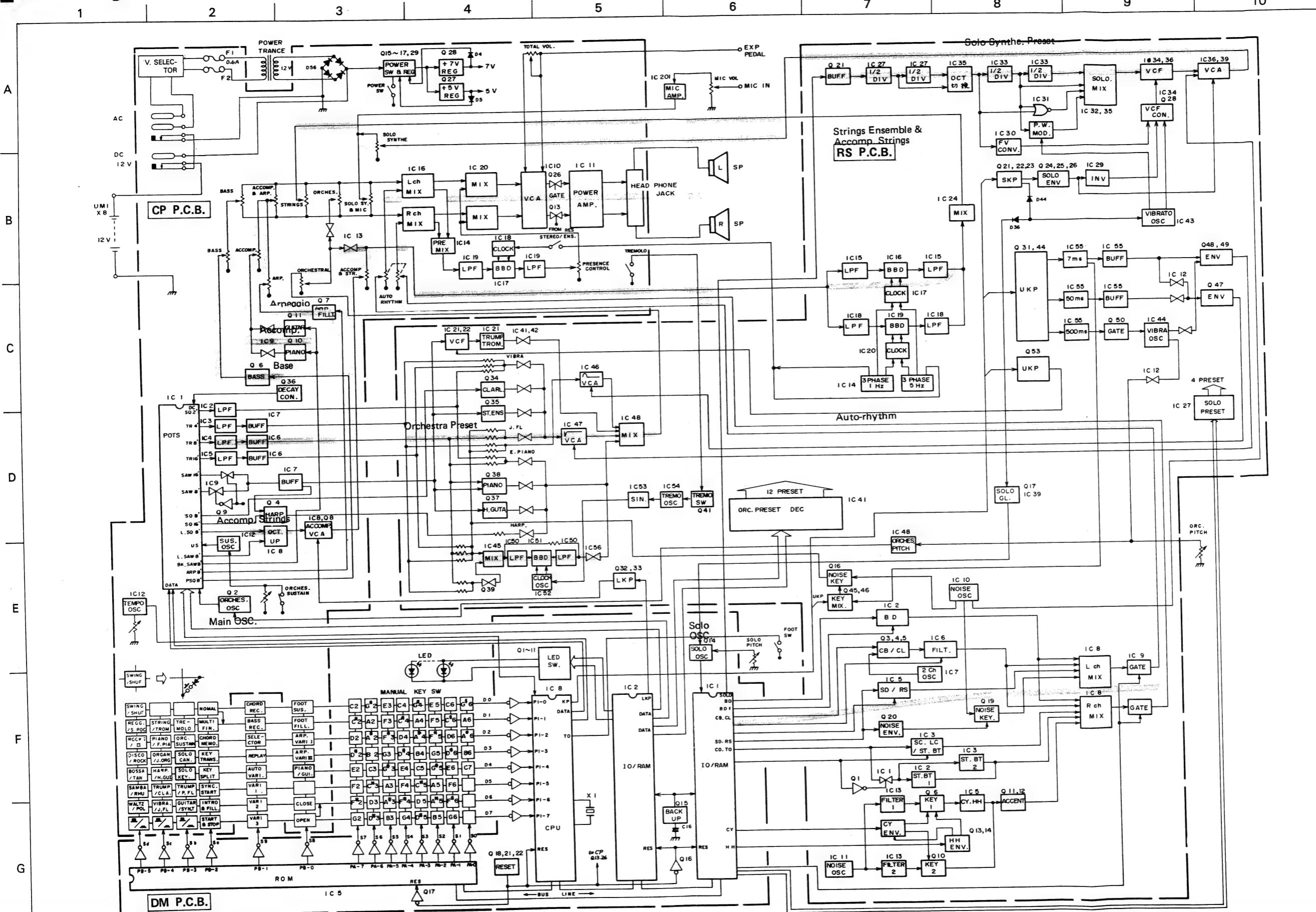
| No. | Item | Measuring device | Adjusting point | Measuring point | Conditions | Adjusting Method |
|-----|---|-------------------------------------|------------------|-------------------------|--|--|
| 1 | Main oscillator frequency (Organ) | Frequency counter | CP Board L1 coil | R17 | Orchestra preset: Organ Orchestra volume: MAX. Main pitch: Center | Depressing A6 key (highest La) turn the coil L1 so that the frequency becomes 7072 Hz. |
| 2 | Solo oscillator frequency (Solo, Synthe.) | By ear | DM Board L1 coil | | Solo preset: Pan flute Solo volume: Center Orchestra preset: Organ Orchestra volume: Center Solo pitch: Center | Depressing a key as your option and hearing sound, adjust L1 so that the sound becomes zero beat. |
| 3 | Accomp. strings envelope | Oscillo-scope | CP Board R229 | R45 | Key split: 1 Accomp. string: MAX. | Turning ON and OFF C3 key repeatedly adjust R229 to obtain the following value. $A : B = 2 : 1$ |
| | | | | | |  |
| 4 | Accomp. strings signal | Oscillo-scope | CP Board R228 | R27 | Key split: 1 Accomp. string: MAX. | Turning ON A2 key adjust R228 so that C is equal to D. |
| | | | | | |  |
| 5 | Tremolo speed | Frequency counter | RS Board R521 | Junction of R446 & R447 | Tremolo SW: ON | Adjust R521 for 6.6 Hz. |
| 6 | Brass VCF cutoff | Oscillo-scope or AC valve voltmeter | RS Board R520 | AUX OUT L-ch | Orchestra preset: Trombone Orchestra volume: MAX. | Turn R520 counterclockwise to open VCF and turn C4 key ON, too, to measure the value of level. Then turning C6 key ON in the same condition, adjust R520 to obtain the same value as the former. |
| 7 | Solo VCF cutoff frequency | Oscillo-scope or AC valve voltmeter | RS Board R321 | AUX OUT L-ch | Solo preset: Pan flute Solo volume: MAX. | Turn R320 fully counterclockwise (continuous sound can be heard even in key OFF condition, then turn R321 counterclockwise (VCF open). Turn E2 key ON and measure value of the level. Then, holding C6 key turned ON, adjust R321 to obtain the same value as the former. |
| 8 | Solo VCA cutoff level | Oscillo-scope | RS Board R320 | AUX OUT L-ch | Solo preset: Pan flute Solo volume: MAX. | Turning on A6 key repeatedly, adjust R320 to obtain the following value. $E : F = 2 : 1$ |
| | | | | | |  |

Preset Chart

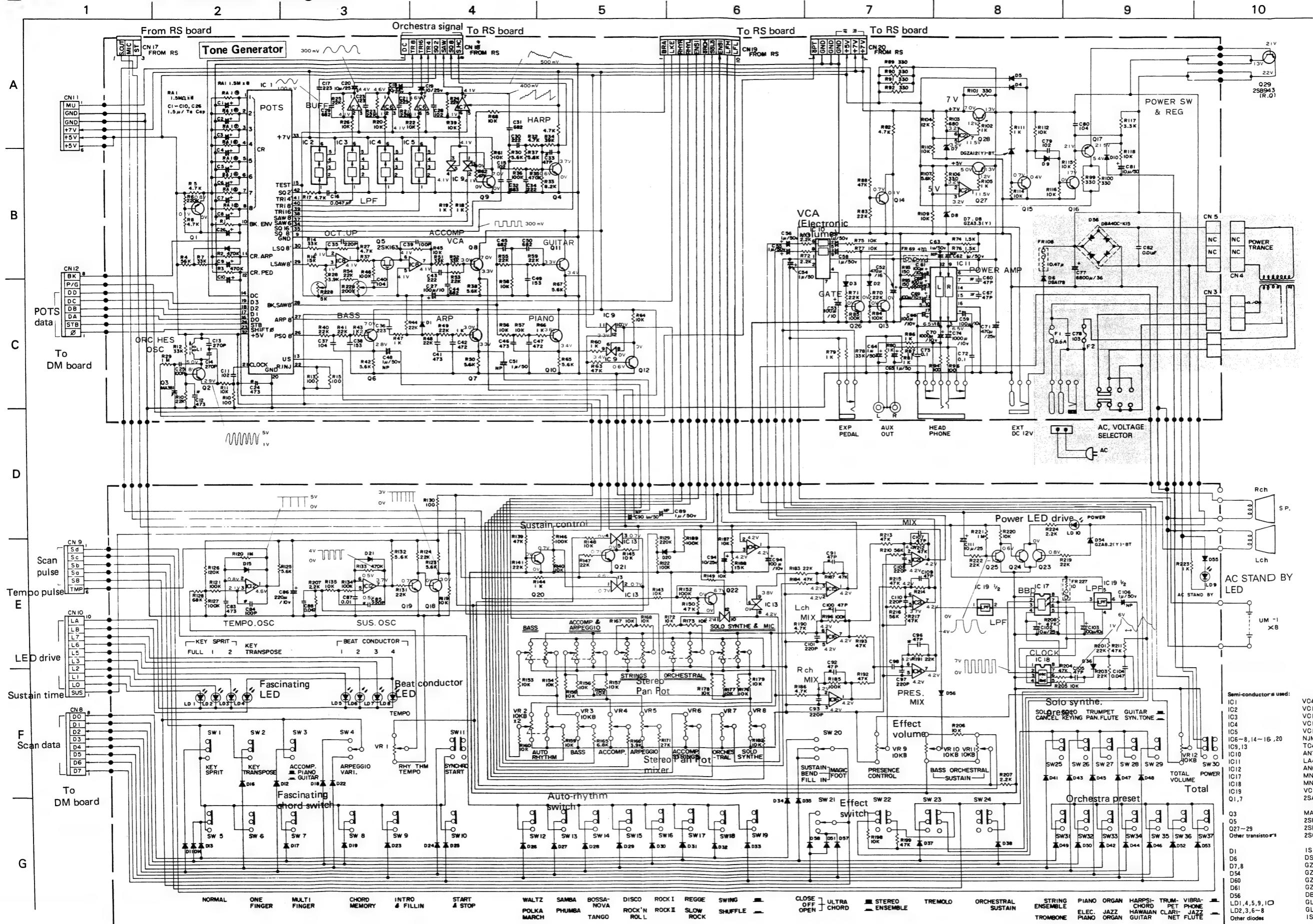
| Orchestra preset | Sound Source | | | | | | | | | | Preset SW | Envelope | | | Effect | | | | Output Waveform | |
|--------------------|--------------|---|----------|------|------|--------|--------|---------|----------|----------------|-----------|----------|----------------------|---------------|----------|-----------------|----------|---|---|---|
| | SQ2' | SQ8' | SQ16' | TR4' | TR8' | TR16' | SAW 8' | SAW 16' | Noise | Per- cus.4' | | Decay | Sus- tain time | Vib- ratio | Rep. | ST. ENS. | VCA | VCF | Waveform | Envelope |
| | 2' | 8' | 16' | 4' | 8' | 16' | 8' | 16' | | | Q47 | (DC) | (US) | | | | | | | |
| Vibraphone | ○ | | | ○ | ○ | | | | | IC41 9-8 | | ○ D77 | Med. | | ○ | ○ | | |  |  |
| Jazz flute | | | | ○ | | | | | ○ | IC41 11-10 | ○ | | Med. | | ○ | ○ | | |  |  |
| Trumpet | | | | | | ○ | | | | IC56 1-2 | | | Med. | | | | ○ | |  |  |
| Clarinet | | ○ | | | | | | | | IC41 1-2 | | | Med. | ○ | | ○ | | |  |  |
| Harpsichord | | ○ | | | | ○ | | | | IC42 4-3 | | ○ D76 | Med. | | | | | |  |  |
| Hawaiian guitar | | | | | | ○ | | | | IC42 8-9 | | ○ D72 | Med. | ○ | | | | |  |  |
| Organ | ○ | | | ○ | ○ | ○ | | | | IC56 4-3 Q39 | | | None | | | | | |  |  |
| Jazz organ | | | ○ | ○ | ○ | | | ○ | IC56 4-3 | ○ | | None | | | | | | |  |  |
| Piano | | | | ○ | | ○ | | | | IC42 10-11 | | ○ D75 | Med. | | | | | |  |  |
| Elec. Piano | | | ○ | ○ | | | | | | IC42 2-1 | | ○ D73 | Med. | | | | | |  |  |
| Strings ensemble | | | | | | ○ | | | | IC41 3-4 | | ○ D74 | Med. | | ○ | ○ | | |  |  |
| Trombone | | | | | | | | ○ | IC56 1-2 | | | Med. | | | | ○ | |  |  | |
| Solo synthe preset | Sound source | Converted waveform | Envelope | | | VCF fc | Noise | | | Effect | | | | | | Output Waveform | | | | |
| | | | Attack | Sus- | Re- | | level | Re- | lease | time | Duty mod. | Repeat | | | Waveform | | Envelope | | | |
| Guitar | 2' |  | 16' | Fast | Low | Long | Low | | | | | | | | | | |  |  | |
| Synthe. tone | 2' |  | 16' | Fast | Low | Long | Med. | | | | ○ | | | | | | |  |  | |
| Trumpet | 2' |  | 16' | Mod. | Low | Long | Med. | | | | ○ | | | | | | |  |  | |
| Pan flute | 2' |  | 8' | Slow | High | Short | High | | | ○ | | ○ | | | | | |  |  | |

B-700 B/N/H

Block Diagram



■ CP PCB Circuit Schematic Diagram

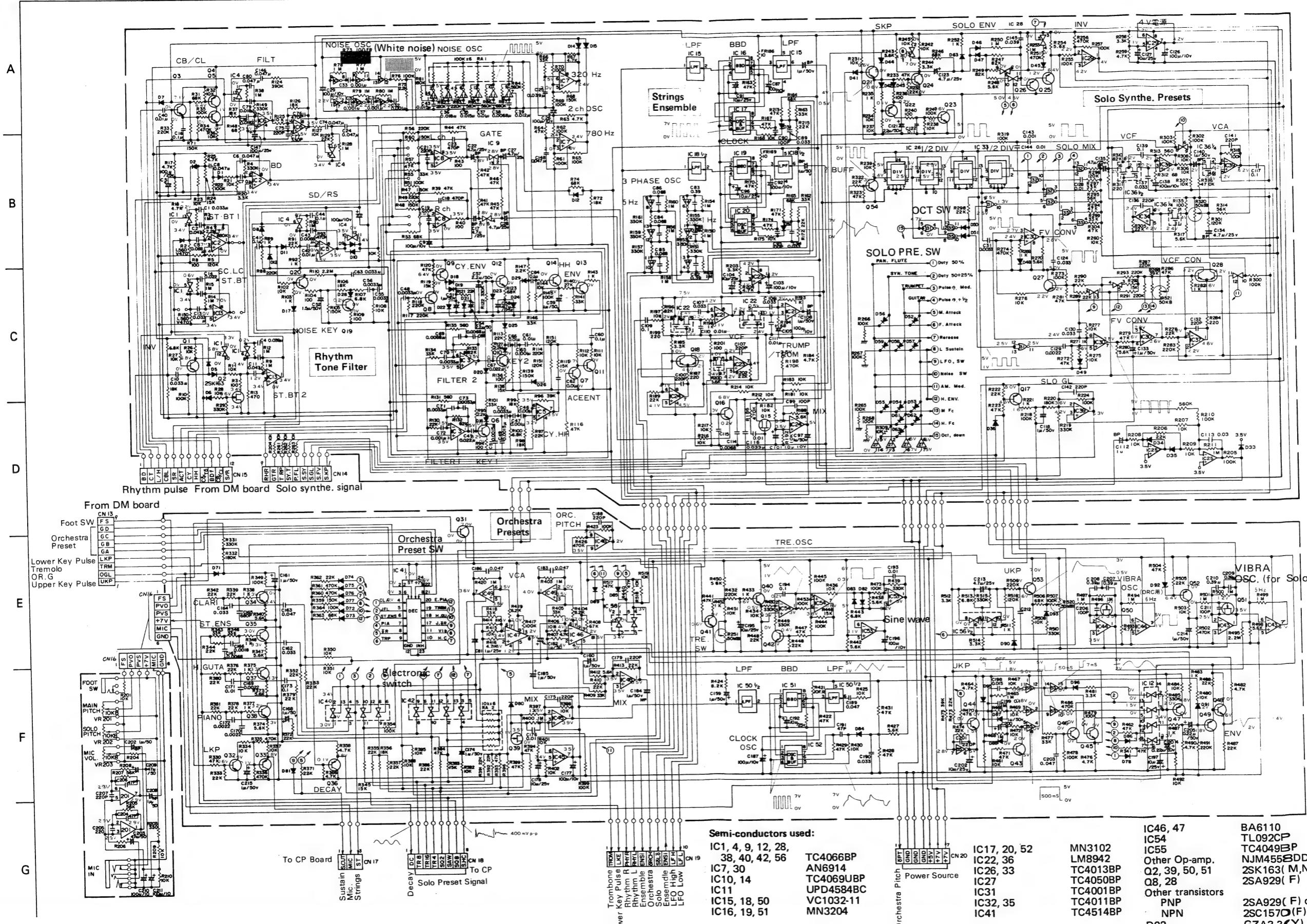


Semi-conductors used:

- IC1 VC4050B(H)
- IC2 VC1032-04
- IC3 VC1032-03
- IC4 VC1032-02
- IC5 VC1032-01
- IC6-8,14-16,20 NJM4558D0
- IC9,13 TC4066BP
- IC10 AN7533
- IC11 LA4125T
- IC12 AN6914
- IC13 MN3204
- IC14 MN3102
- IC15 VC1032-II
- IC16 2SA929(F)
- IC17 or 2SA564(R, S)
- IC18 MA38(5A, 6B)
- IC19 2SK163(M, N)
- IC20 2SB943(P, Q)
- IC21 2SC1570NP(F)
- IC22 or 2SC828(R, S)
- D1 IS18BFM
- D6 DSA17B-KD2
- D7 GZA3(Y)
- D8 GZA2(Y)
- D9 GZA12(Y)
- D10 GZA5-6(Y)
- D11 DBA40C-K15
- D12 GL-3PR7
- D13 GL-3NG7
- D14 IS1555
- D15 Other diodes

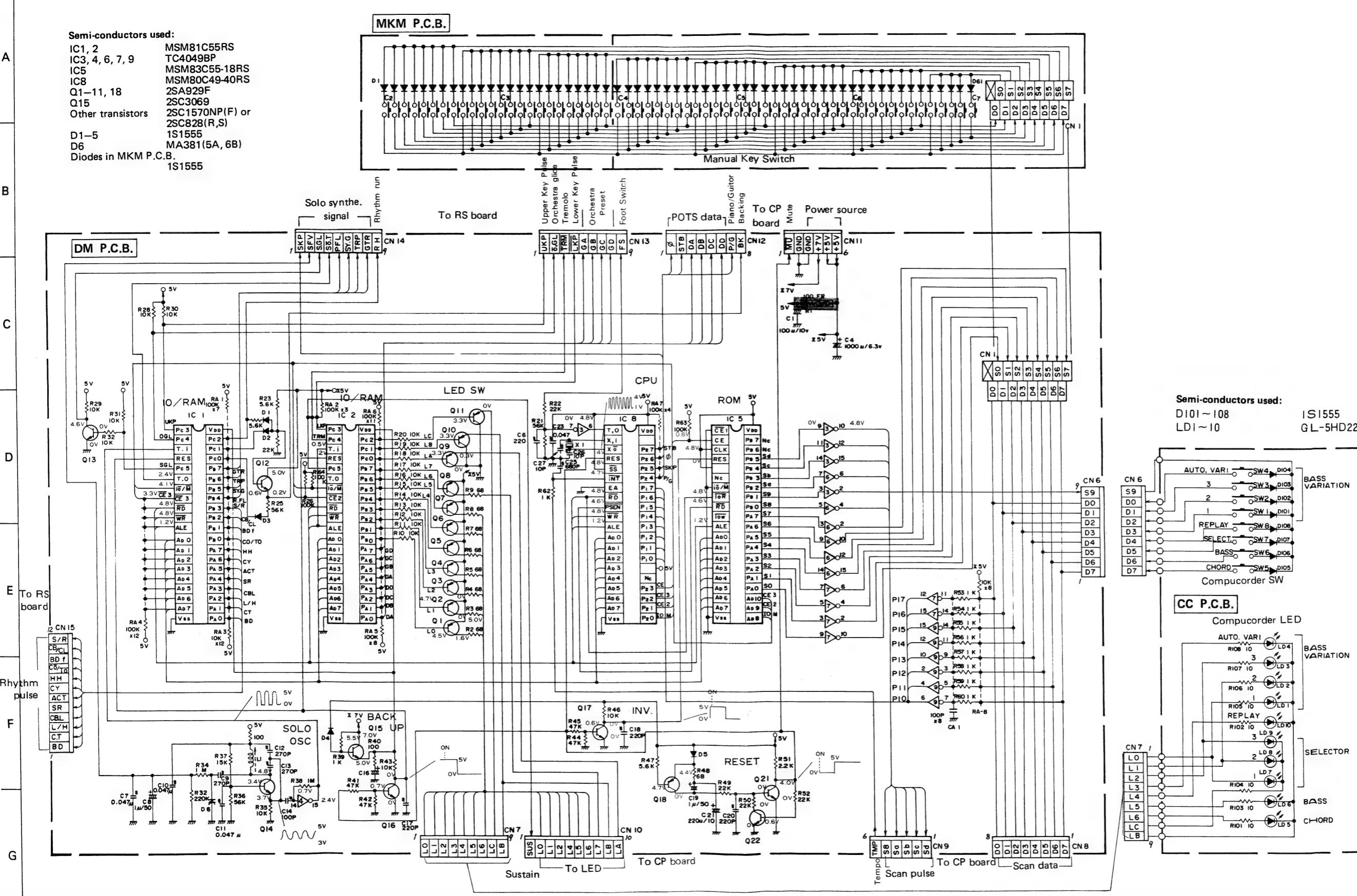
■ RS, ET PCB Circuit Schematic Diagram

1 2 3 4 5 6 7 8 9 10

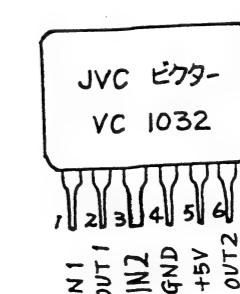
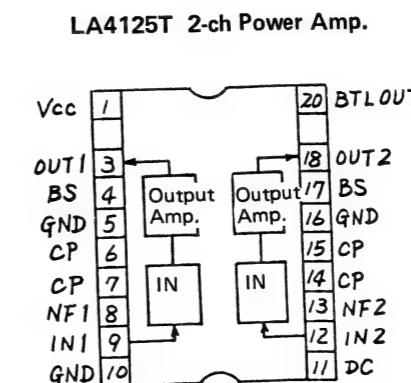
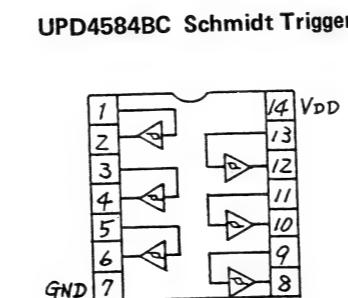
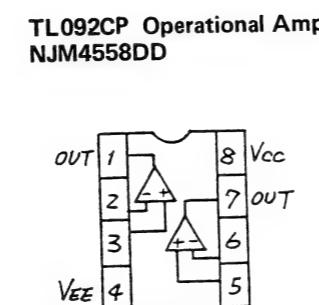
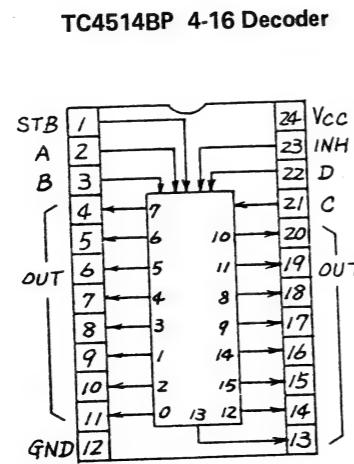
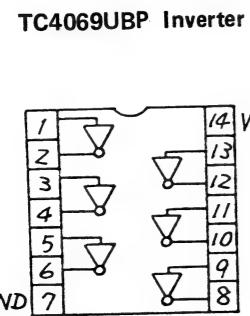
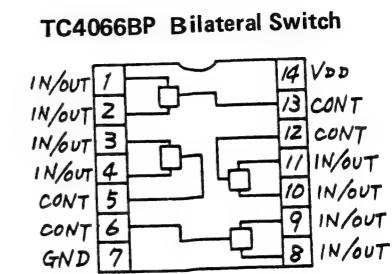
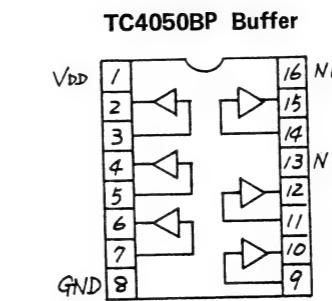
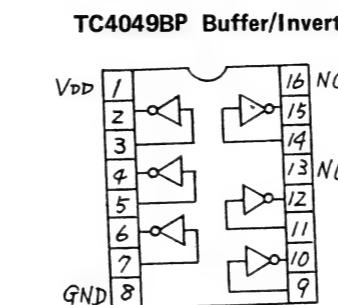
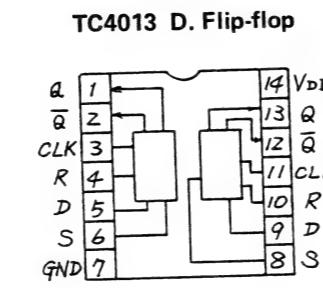
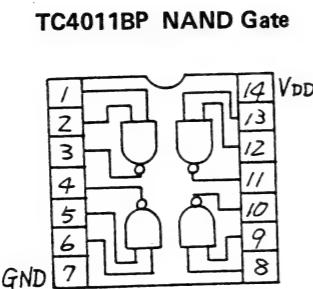
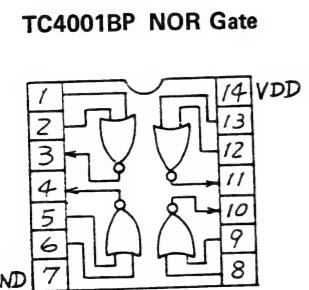
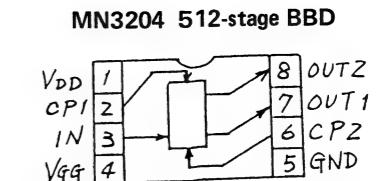
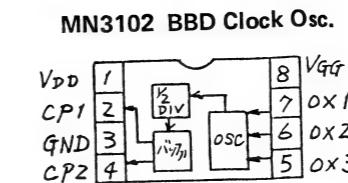
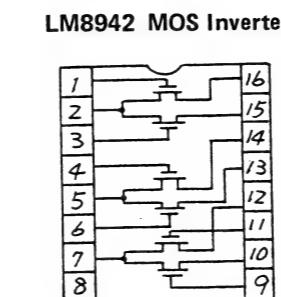
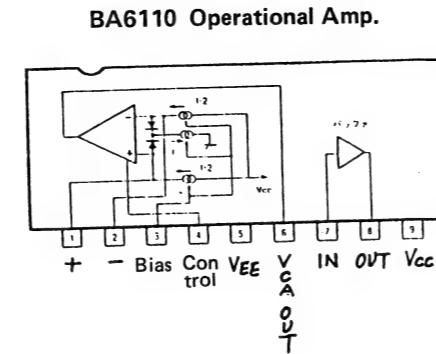
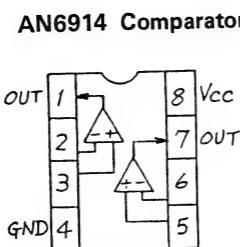
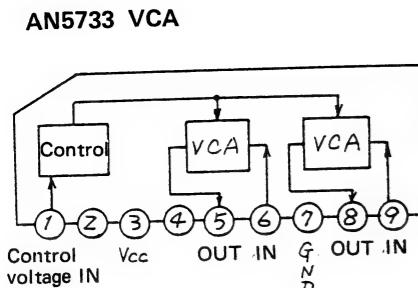


■ DM, MKM, CC PCB Circuit Schematic Diagram

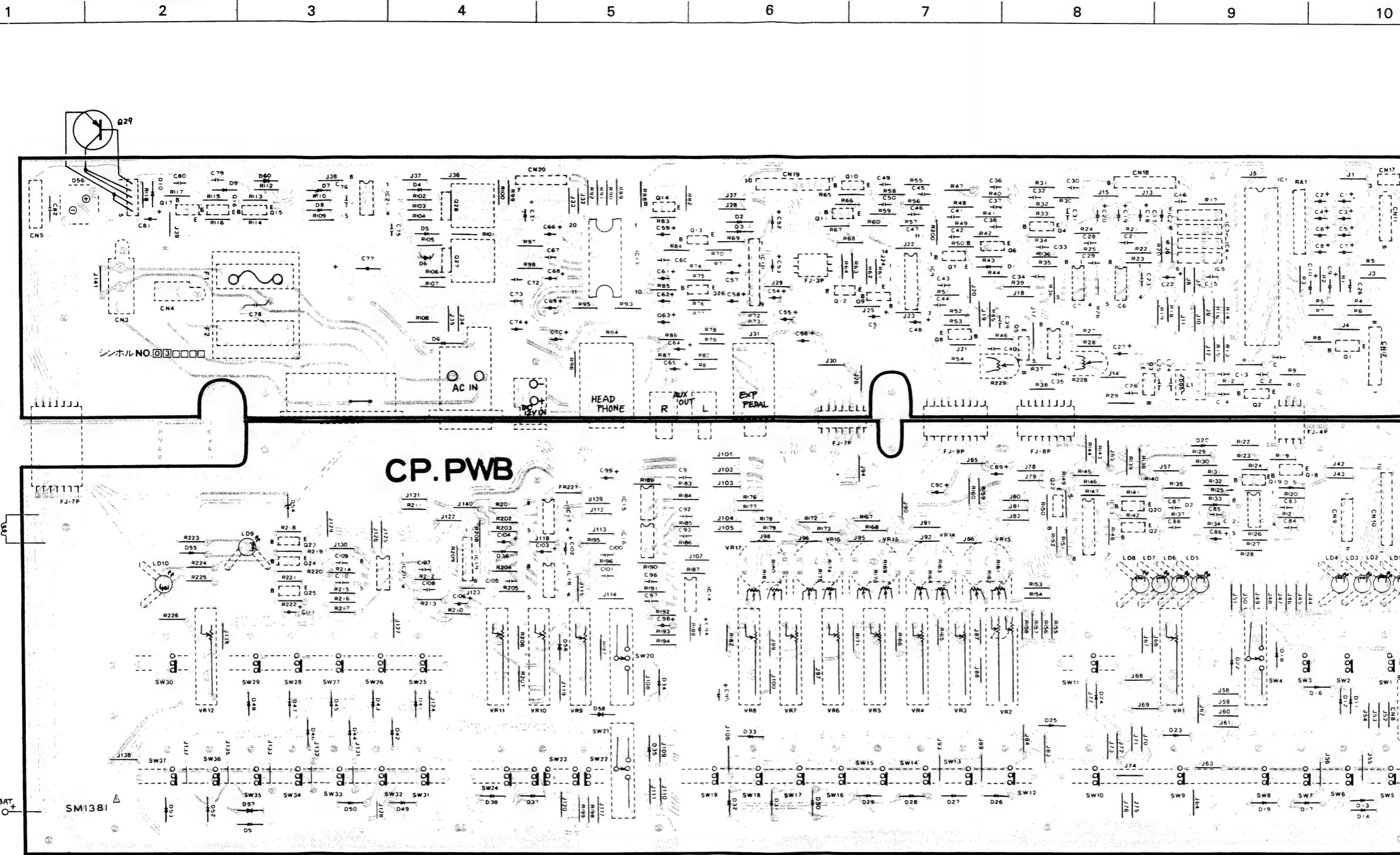
1 2 3 4 5 6 7 8 9 10



IC Block Diagram



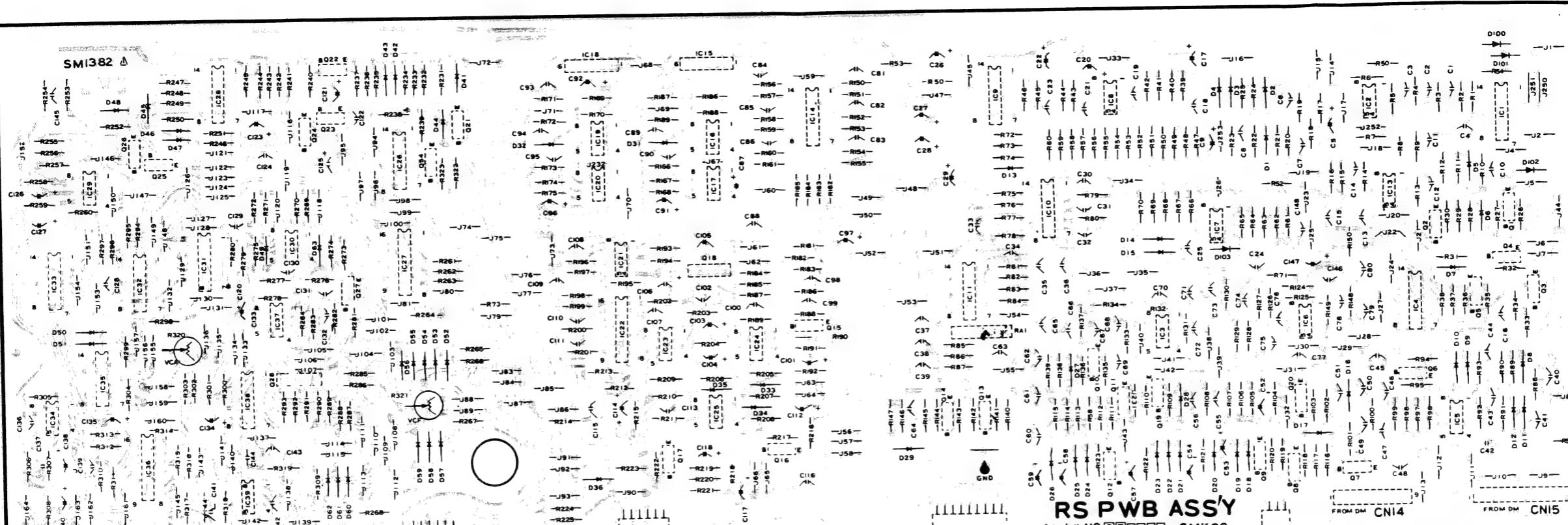
■ CP PCB Pattern Diagram



■ RS. ET PCB Pattern Diagram

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

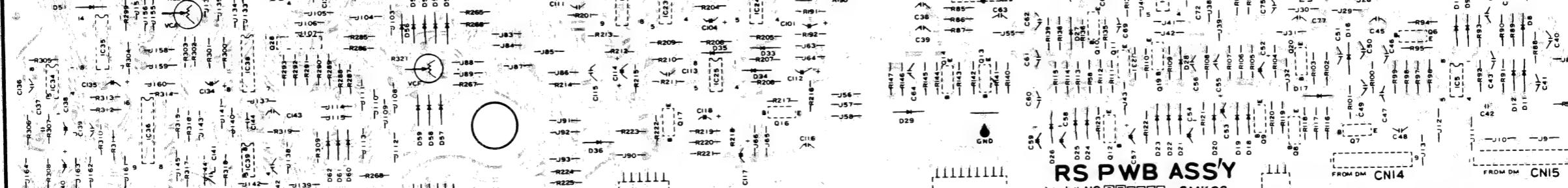
A



B



C



D



E

F

G

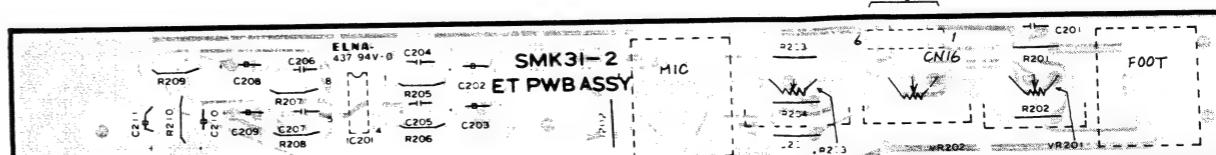
RS PWB ASSY
シボルNO.□7□□□□ SMK33

FROM PH CN14 FROM PH CN15

FROM DM CN14 FROM DM CN15

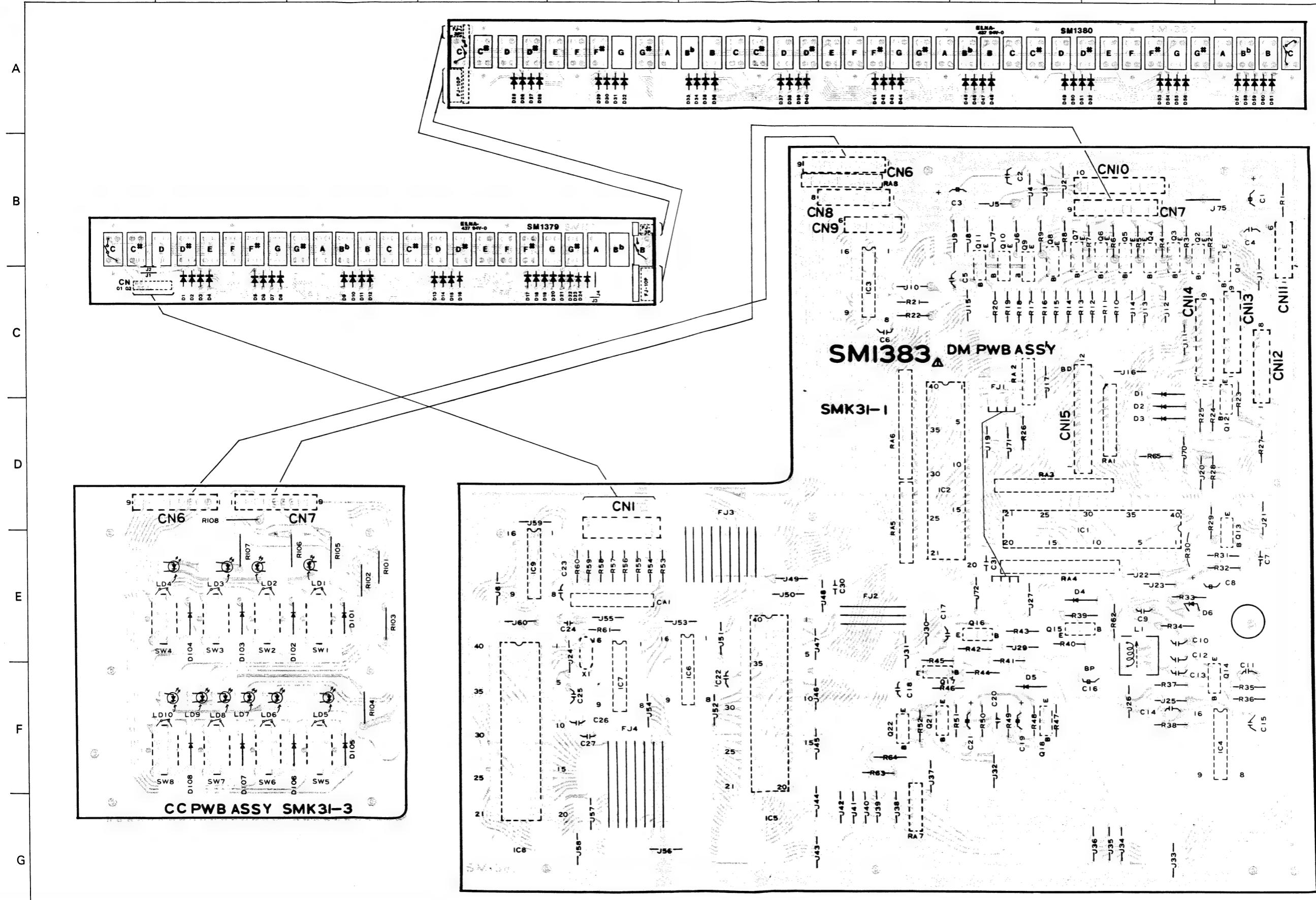
SMK33
シボルNO.□7□□□□

FROM DM CN14 FROM DM CN15

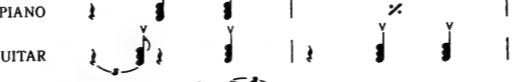
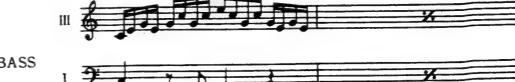
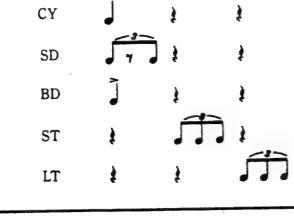
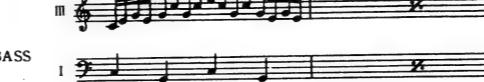
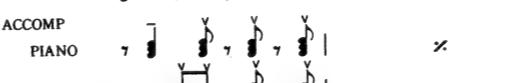
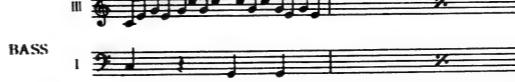
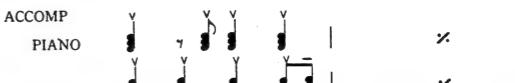
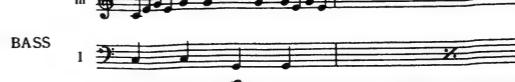
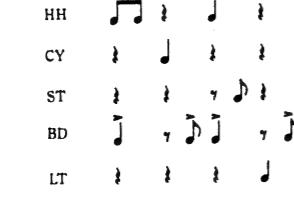


■ DM. MKM. CC Pattern Diagram

1 2 3 4 5 6 7 8 9 10



Rhythm Patterns

| | | | |
|--|---|---|---|
| INTRO I (Rock I, Rock'n Roll)  | WALTZ  | SAMBA  | BOSSA NOVA  |
| INTRO II (Swing, Shuffle, Reggae, Slow Rock)  | ACCOMP PIANO  GUITAR  ARPEGGIO I  II  III  BASS  | ACCOMP PIANO  GUITAR  ARPEGGIO I  II  III  BASS  | ACCOMP PIANO  GUITAR  ARPEGGIO I  II  III  BASS  |
| INTRO III (Samba, Disco, Rock II)  | POLKA MARCH  | RHUMBA  | TANGO  |
| INTRO IV (Waltz)  | ACCOMP PIANO  GUITAR  ARPEGGIO I  II  III  BASS  | ACCOMP PIANO  GUITAR  ARPEGGIO I  II  III  BASS  | ACCOMP PIANO  GUITAR  ARPEGGIO I  II  III  BASS  |
| INTRO V (Bossa Nova, Polka March, Tango, Rhumba)  |  |  |  |

| | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| DISCO | ROCK I (Rock 8) | REGGAE | SWING |
| HH CY SD BD | HH CY SD BD | HH CY SD BD | HH CY BD |
| ACCOMP PIANO GUITAR | ACCOMP PIANO GUITAR | ACCOMP PIANO GUITAR | ACCOMP PIANO GUITAR |
| ARPEGGIO I II III | ARPEGGIO I II III | ARPEGGIO I II III | ARPEGGIO I II III |
| BASS I II III | BASS I II III | BASS I II III | BASS I II III |
| ROCK N ROLL | ROCK II (Rock 16) | SLOW ROCK (Ballad) | SHUFFLE |
| HH SD BD | HH CY SD BD | HH SD BD | HH CY SD BD |
| ACCOMP PIANO GUITAR | ACCOMP PIANO GUITAR | ACCOMP PIANO GUITAR | ACCOMP PIANO GUITAR |
| ARPEGGIO I II III | ARPEGGIO I II III | ARPEGGIO I II III | ARPEGGIO I II III |
| BASS I II III | BASS I II III | BASS I II III | BASS I II III |

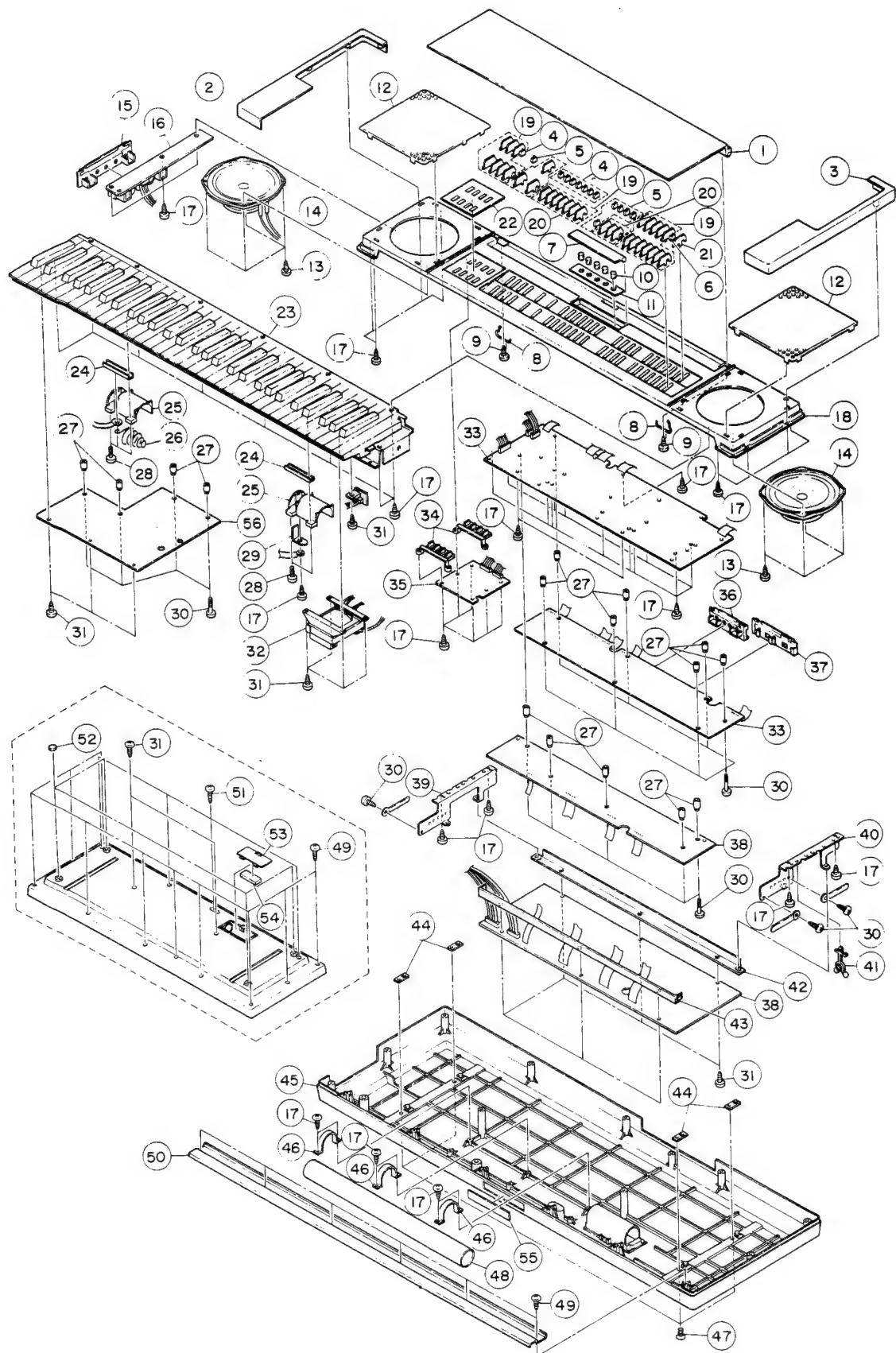
PARTS LIST

■ PARTS LIST BY KIND

| Kind | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|-----------------|---|---------------|----------------------|-----------------------|------|
| P.W.B. Ass'y | | SMK29 | MKM-6124 Board Ass'y | Manual Key Switch 1/2 | 1 |
| | | SMK30 | MKM-6137 Board Ass'y | " | 1 |
| | | SMK31-1 | DM Board Ass'y | Digital & Memory | 1 |
| | | SMK31-2 | ET Board Ass'y | External | 1 |
| | | SMK31-3 | CC Board Ass'y | Compcorder | 1 |
| Semi-conductor | | SMK32 | CP Board Ass'y | Control & Power | 1 |
| | | SMK33 | RS Board Ass'y | Rhythm & Synthesizer | 1 |
| | | MSM80C49-64RS | IC | CPU | 1 |
| | | MSM83C55-20RS | " | ROM | 1 |
| | | MSM81C55RS | " | RAM | 2 |
| | | VC4050B(H) | " | POTS | 1 |
| | | VC1032-01 | " | Filter | 1 |
| | | " -02 | " | " | 1 |
| | | " -03 | " | " | 1 |
| | | " -04 | " | " | 1 |
| | | " -11 | " | " | 4 |
| | | TC4001BP | " | NOR Gate | 1 |
| | | TC4011BP | " | NAND Gate | 2 |
| | | TC4013BP | " | D Flip-flop | 2 |
| | | TC4049BP | " | Inversion Buffer | 6 |
| | | TC4050BP | " | Buffer | 1 |
| | | TC4066BP | " | Analog Switch | 11 |
| | | TC4069UBP | " | Inverter | 2 |
| | | TC4514BP | " | 4-16 Decoder | 1 |
| | | UPD4584BC | " | Schmitt Trigger | 1 |
| | | MN3204 | " | BBD | 4 |
| | | MN3102 | " | Clock Osc. | 4 |
| | | NJM4558DD | " | Op-amp. | 17 |
| | | TL092CP | " | " | 1 |
| | | LM8942 | " | MOS Inverter | 2 |
| | | AN5733 | " | VCA (Dual Attenuator) | 1 |
| | | AN6914 | " | Comparator | 3 |
| | | BA6110 | " | Op-amp. | 2 |
| | | LA4125T | " | Power Amp. | 1 |
| | | 2SA798G | Transistor | | 2 |
| | | 2SA929(F) | " | | 25 |
| | | 2SB943(P,Q) | " | | 3 |
| | | 2SC1570NO(F) | " | | 61 |
| | | 2SC3069 | " | | 1 |
| | | 2SK163(M,N) | FET | | 5 |
| | | MA381(5A, 6B) | Varicap | | 2 |
| | | DBA40C-K15 | Diode | | 1 |
| | | DSA17B-KD2 | " | | 1 |
| | | 1S1555 | " | | 207 |
| | | 1S188FM | " | | 1 |
| LED | | GZA3.3(Y) | Zener Diode | | 3 |
| | | GZA8.2(Y) | " | | 1 |
| | | GZA12(Y) | " | | 1 |
| | | GL-3PR7 | LED | Red | 5 |
| | | GL-3NG7 | " | Green | 5 |
| Ceramic coil | | BL-5HD22 | " | Compcorder | 10 |
| | | SMV2114 | Ceramic Coil | CPU | 1 |
| | | SMV2110 | Osc. Coil | Master Oscillator | 2 |
| | | SM40329-473 | Super Capacitor | 0.47 μF | 1 |
| | | SMV2102 | Slide Switch | | 3 |

| Kind | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|--------------------------|------------------|---|---|---|------------------------|
| Switch | | SM40294-003 " -007 " -008 " -009 " -010 | Push Switch " " " " | | 1 1 1 1 1 |
| | | " -011 " -012 | " " | | 1 1 |
| Volume control | | SM40152 SMV2063 SMV2111 | Tact Switch Key Switch V. Resistor (Slide Volume) | Compunder Manual Key | 8 61 11 |
| Knob | | SMV2119 SMV2118 SMV2080 SMV2090 SM3926-SLV | " (") " (Volume) " (") " (") Push Knob | Rhythm Pan Pot Mic. Pitch Silver | 1 5 1 2 27 |
| | | " -BLU " -RED SM40367-SLV " -BLU " -RED | " " Slide Knob " " | Blue Red Silver Blue Red | 6 1 8 6 1 |
| Jack | ⚠ | SM3941-SLV SM3940 QMC0263-002-BS SMV2112 QMS6312-018 | Round Knob Touch Knob AC Socket DC Jack Headphone Jack | Pan Pot Compunder Headphone | 5 2 1 1 1 |
| | | QMS6303-015 SMV2107-WHT " -RED QMS6312-019 QMS6303-016 | Expression Jack Pin Jack " " Mic. Jack Foot Switch Jack | Expression AUX OUT " Microphone Foot Switch | 1 1 1 1 1 |
| Speaker Transformer Cord | ⚠ ⚠ ⚠ ⚠ | HSA1302-01D SMV2121-BS QMP3950-224 QMP9017-013-BS QMP2550-200 | Speaker Transformer Power Cord " " | 14 cm for Model N for Model B for Model H | 2 1 1 1 |
| Fuse | ⚠ ⚠ | QMF51A2-R40-BS " -R20-BS | Fuse " | T400 mA T200 mA | 1 1 |

Cabinet Assembly



PARTS LIST

| No. | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|-----|---|----------------|---------------------|-------------|------|
| 1 | | SM2765 | Smoke Cover | | 1 |
| 2 | | SM1377-00L-WHT | Side Panel | | 1 |
| 3 | | " -00R-WHT | " | | 1 |
| 4 | | SM40367-SLV | Slide Knob | | 8 |
| 5 | | " -BLU | " | | 6 |
| 6 | | " -RED | " | | 1 |
| 7 | | SM3942 | Pan Pot Cover | | 1 |
| 8 | | SM3952 | Cover Holder | | 2 |
| 9 | | GBSF3012Z | T. Screw | | 2 |
| 10 | | SM3941-SLV | Round Knob | | 5 |
| 11 | | SM3946 | Pan Pot Plate | | 1 |
| 12 | | SM3951 | Speaker Net | | 2 |
| 13 | | GBSF3008Z | T. Screw | | 8 |
| 14 | | HSA1302-01D | Speaker | | 2 |
| 15 | | SM3943-001 | External Plate - 3 | | 1 |
| 16 | | SMK31-2 | ET. P.W.B. Ass'y | | 1 |
| 17 | | SBSF3008Z | T. Screw | | 50 |
| 18 | | SM1376-00B | Control Panel | | 1 |
| 19 | | SM3926-SLV | Push Knob | | 27 |
| 20 | | " -BLU | " | | 6 |
| 21 | | " -RED | " | | 1 |
| 22 | | SM3944 | Compu. Plate | | 1 |
| 23 | | | Manual Key Ass'y | | 1 |
| 24 | | SM40399 | B. Terminal Bracket | | 2 |
| 25 | | SM3928 | Battery Holder | | 2 |
| 26 | | SM40374 | Battery Spring | | 1 |
| 27 | | SM40302-310 | Bushing | | 16 |
| 28 | | SBST3020Z | T. Screw | | 5 |
| 29 | | SM40373 | Battery Terminal | | 1 |
| 30 | | SBSF3025 | T. Screw | | 18 |
| 31 | | SBST3008Z | " | | 27 |
| 32 | ⚠ | SMV2121-BS | Power Transformer | | 1 |
| 33 | | SMK32-B | CP P.W.B. Ass'y | | 1 |
| 34 | | SM3940 | Touch Knob | | 2 |
| 35 | | SMK31-3 | CC P.W.B. Ass'y | | 1 |
| 36 | | SM3931-001 | External Plate - 2 | | 1 |
| 37 | | SM3930-001 | " - 1 | | 1 |
| 38 | | SMK33 | RS P.W.B. Ass'y | | 1 |
| 39 | | SM3950-002 | P.C.B. Bracket | | 1 |
| 40 | | " -001 | " | | 1 |
| 41 | | QHW1115-001 | Wire Clamp | | 1 |
| 42 | | SM3949-001 | P.C.B. Bracket B | | 1 |
| 43 | | " -002 | " | | 1 |
| 44 | | SM40333-002 | Foot Bracket | | 4 |
| 45 | | SM1378-001 | Base | | 1 |
| 46 | | SM40370 | Pipe Holder | | 3 |
| 47 | | SSSP3010B | T. Screw | | 4 |
| 48 | | SM40369 | Battery Pipe | | 1 |
| 49 | | SBSF3012M | T. Screw | | 16 |
| 50 | | SM3945 | Front Panel | | 1 |
| 51 | | DPSP4010Z | Screw | | 4 |
| 52 | | SM40334 | Foot Felt | | 4 |
| 53 | | SM3927 | Battery Cover | | 1 |
| 54 | | SM40330-005 | Sponge | | 1 |
| 55 | | C41418-C | Brand Mark | | 1 |
| 56 | | SMK31-1 | DM P.C.B. Ass'y | | 1 |

Manual Key Assembly

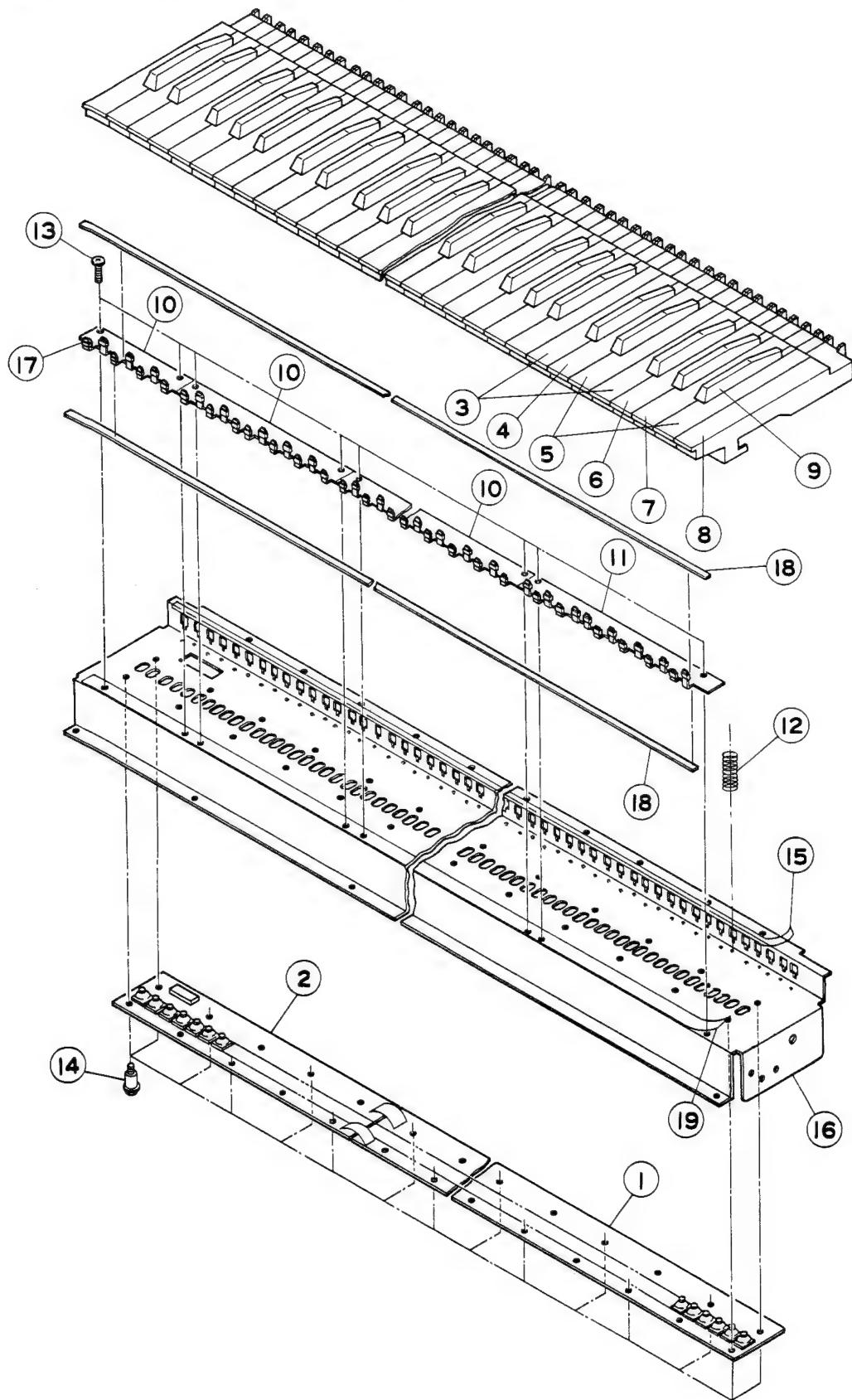


Fig. 26

■ MANUAL KEY ASSEMBLY PARTS LIST

| No. | △ | Parts No. | Parts Name | Description | Q'ty |
|-----|---|------------|-------------------------|------------------------------|---------|
| 1 | | SMK30 | MK-61 Assembly | | 1 |
| 2 | | SMK29 | MKM-6137 Board Assembly | | 1 |
| 3 | | SM2732-0CF | MKM-6124 Board Assembly | | 1 |
| 4 | | " -00D | White Key | Do (C), Fa (F) Re (D) | 10 5 |
| 5 | | " -0EB | " | Mi (E), Si (B) | 10 |
| 6 | | " -00G | " | So (G) | 5 |
| 7 | | " -00A | " | La (A) | 5 |
| 8 | | " -0CC | " | Do (C) in the Highest Octave | 1 |
| 9 | | SM3860 | Black Key | | 25 |
| 10 | | SM3861-012 | Key Guide | | 4 |
| 11 | | " -013 | " | | 1 |
| 12 | | SM40281 | Key Spring | | 61 |

■ MKM BOARD ASSEMBLY PARTS LIST

| Symbol No. | △ | Parts No. | Parts Name | Description | Q'ty |
|------------|---|--|---|-------------|-------------------------|
| | | SMK29 1S1555 SMV2063 SS31053-016 SS31055-16152 | MKM-6124 Board Assembly Diode Key Switch Card Fit Connector Card Cord | Bass | 1 24 24 1 1 |
| | | SMK30 1S1555 SMV2063 | MKM-6137 Board Assembly Diode Key Switch | Treble | 1 37 37 |

■ DM BOARD ASSEMBLY PARTS LIST

| Symbol No. | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|-----------------|---|---------------|--------------------|------------------|------|
| IC8 | | SMK31-1 | DM Board Assembly | | 1 |
| IC5 | | MSM80C49-64RS | IC | CPU | 1 |
| IC1, 2 | | MSM83C55-20RS | " | ROM | 1 |
| | | MSM81C55RS | " | RAM | 2 |
| IC3, 4, 6, 7, 9 | | TC4049BP | " | Inversion Buffer | 5 |
| Q1-11, 18 | | 2SA929F | Transistor | | 12 |
| Q | | 2SC1570NP(F) | " | | 7 |
| Q15 | | 2SC3069 | " | | 1 |
| D6 | | MA381(5A, 6B) | Varicap | | 1 |
| D1-5 | | 1S1555 | Diode | | 5 |
| X1 | | SMV2114 | Ceralock | | 1 |
| C16 | | SM40329-473 | Super Capacitor | | 1 |
| L1 | | SMV2110 | Osc. Coil | | 1 |
| RA1 | | EXB-P87104K | Resistor Array | | 1 |
| RA2, 7 | | EXB-P84104K | " | 100 kΩ | 2 |
| RA3 | | EXB-P812103K | " | 10 kΩ | 1 |
| RA4 | | EXB-P812104K | " | 100 kΩ | 1 |
| RA5 | | EXB-P88104K | " | 100 kΩ | 1 |
| RA6 | | EXB-P811104K | " | 100 kΩ | 1 |
| RA8 | | EXB-P88103K | " | 10 kΩ | 1 |
| R1 | | QRZ0052-100 | Fusible Resistor | | 1 |
| CA1 | | EXF-P8101MW | Capacitor Array | | 1 |
| | | QET61EM-106Z | E. Capacitor | | 1 |
| | | QET61AM-227Z | " | | 1 |
| CN1 | ⚠ | SS3660-002 | IC Socket | | 2 |
| | | SS31053-016 | Card Fit Connector | for IC5, 8 | 1 |

■ RS BOARD ASSEMBLY PARTS LIST

| Symbol No. | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|---|---|--|---|--|--------------|
| IC41 IC1,4,9,12,28,38,40,42,56 IC55 | | SMK33 TC4514BP TC4066BP TC4049BP | RS Board Assembly IC " " " " | 4-16 Decoder Analog Switch Inversion Buffer | 1 1 9 1 |
| IC26, 33 IC27 IC10, 14 IC31 IC32, 35 | | TC4013BP TC4050BP TC4069UBP TC4001BP TC4011BP | " " " " " | Flip-flop Buffer Inverter NOR Gate NAND Gate | 2 1 2 1 2 |
| IC11 IC16, 19, 51 IC17, 20, 52 IC54 | | UPD4584BC MN3204 MN3102 NJM4558DD TL092CP | " " " " " | Inverter BBD Clock Oscillator Op-amp. " | 1 3 3 19 1 |
| IC22, 36 IC7, 30 IC46, 47 IC15, 18, 50 Q8, 28 | | LM8942 AN6914 BA6110 VC1032-11 2SA798G | " " " " Transistor | FET Array Comparator VCA Filter | 2 2 2 3 2 |
| Q Q Q2, 39, 50, 51 D92 | | 2SA929(F) 2SC1570(F) 2SK163(M,N) GZA3.3(Y) 1S1555 | " " FET Zener Diode Diode | | 11 32 4 1 84 |
| RA2 RA1 R521,520,321,320 | ⚠ | EXB-P86103K EXB-P86104K QRZ0052-100 QVP8A0B-054 | Resistor Array " Fusible Resistor | | 1 1 4 4 |
| | | QFV81HJ-394 QET61AM-107Z " -227Z | TF Capacitor E. Capacitor " | 100 µF/10 V 220 µF/10 V | 8 15 6 |
| | | QET61EM-475Z " -106Z QET61HM-105Z QEC61HM-224Z " -155Z | " " " " " " " " | 4.7 µF/25 V 10 µF/25 V 1 µF/50 V | 4 5 21 2 1 |
| | | QEN61EM-475Z QEN61HM-105Z | NP Capacitor " | | 2 1 |

■ CP BOARD ASSEMBLY PARTS LIST

| Symbol No. | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|---------------------|---|---------------|-------------------|---------------|------|
| IC1 | | SMK32 | CP Board Assembly | | 1 |
| IC5 | | VC4050B(H) | IC | P.O.T.S. | 1 |
| IC4 | | VC1032-01 | " | Filter | 1 |
| | | " -02 | " | " | 1 |
| IC3 | | " -03 | " | " | 1 |
| IC2 | | " -04 | " | " | 1 |
| IC19 | | " -11 | " | " | 1 |
| IC6,7,8,14,15,16,20 | | NJM4558DD | " | Op-amp. | 7 |
| IC9, 13 | | TC4066BP | " | Analog Switch | 2 |
| IC10 | | AN5733 | " | VCA | 1 |
| IC11 | | LA4125T | " | Power Amp. | 1 |
| IC12 | | AN6914 | " | Comparator | 1 |
| IC17 | | MN3204 | " | BBC | 1 |
| IC18 | | MN3102 | " | Clock | 1 |
| Q1, 7 | | 2SA929(F) | Transistor | | 2 |
| Q27, 28, 29 | | 2SB943(P,Q) | " | | 3 |
| Q | | 2SC1570NP(F) | " | | 22 |
| Q5 | | 2SK163(M,N) | FET | | 1 |
| Q3 | | MA381(5A, 6B) | Varicap | | 1 |
| D56 | | DBA40C-K15 | Diode | | 1 |
| D6 | | DSA17B-KD2 | " | | 1 |
| D1 | | 1S1555 | " | | 49 |
| D7, 8 | | 1S188FM | " | | 1 |
| | | GZA3.3(Y) | Zener Diode | | 2 |
| D54 | | GZA8.2(Y) | " | | 1 |
| | | GZA12(Y) | " | | 1 |
| LD1, 4, 5, 9, 10 | | GL-3PR7 | LED | Red | 5 |
| LD2, 3, 6, 7, 8 | | GL-3NG7 | " | Green | 5 |
| L1 | | SMV2110 | Osc. Coil | | 1 |
| R229 | | QVP8A0B-025 | V. Resistor | 200 kB | 1 |
| R228 | | " -053 | " | 5 kB | 1 |
| RA1 | | EXB-P87105J | Resistor Array | 1.5 M | 1 |
| R108 | | QRZ0064-R47 | Fusible Resistor | 0.47 Ω | 2 |
| R227 | ⚠ | QRZ0052-100 | " | 10 Ω | 1 |
| R69 | ⚠ | QRZ0052-470 | " | 4.7 Ω | 1 |
| C82 | ⚠ | QCF32HP-103 | " | | 2 |
| | | QCF31HP-102 | " | | 1 |
| C77 | | " -473 | " | | 1 |
| C71 | | QFM31HJ- | M. Capacitor | | 27 |
| C70, 74 | | QEZ0061-688 | E. Capacitor | 6800 μF/36 V | 1 |
| | | QET51ER-477 | " | 470 μF/25 V | 1 |
| | | QET51AR-108 | " | 1000 μF/10 V | 2 |
| C52 | | QET51CR-477 | " | 470 μF/16 V | 1 |
| | | QET61AM-107 | " | 100 μF/16 V | 12 |
| | | QET61EM-106 | " | 10 μF/25 V | 15 |
| | | QET61HM-105 | " | 1 μF/50 V | 11 |
| | | QEJ61CM-155 | " | 1.5 μF/16 V | 11 |
| SW4, 20, 21 | | SMV2102 | Slide Switch | | 3 |
| SW11 | | SM40294-003 | Push Switch | | 1 |
| SW30 | | " -007 | " | | 1 |
| SW25-29 | | " -008 | " | | 1 |
| SW31-37 | | " -009 | " | | 1 |

■ CP BOARD ASSEMBLY PARTS LIST (Continued)

| Symbol No. | ⚠ | Parts No. | Parts Name | Description | Q'ty |
|------------|---|----------------|----------------------------|--------------------|------|
| SW22-24 | | SM40294-010 | Push Switch | | 1 |
| SW12-19 | | " -011 | " | | 1 |
| SW5-10 | | " -012 | " | | 1 |
| SW1-3 | | " -013 | " | | 1 |
| VR1, 3-12 | | SMV2111 | V. Resistor (Slide Volume) | | 11 |
| VR2 | | SMV2119 | " (") | Rhythm | 1 |
| VR13-17 | ⚠ | SMV2118 | " (Volume) | Pan Pot | 5 |
| | | QMC0262-003 | AC Socket | | 1 |
| | | SMV2112 | DC Jack | | 1 |
| | | QMS6312-018 | HP Jack | Headphone | 1 |
| | | QMS6303-015 | EXP Jack | Expression | 1 |
| | | SMV2107-WHT | Pin Jack | AUX OUT | 1 |
| | | " -RED | " | " | 1 |
| | | SMV2082 | Heat Sink | for IC11 | 1 |
| | | SMV2155 | " | for Q27, 28 | 2 |
| | ⚠ | SM3660 | IC Socket | for IC1 | 1 |
| | ⚠ | SM3929 | LED Mount | | 10 |
| | ⚠ | QMF51A2-R40-BS | Fuse | | 1 |
| | ⚠ | QMF51A2-R20-BS | " | | 1 |
| | ⚠ | E48965-002 | Fuse Socket | T400 mA T200 mA | 2 |

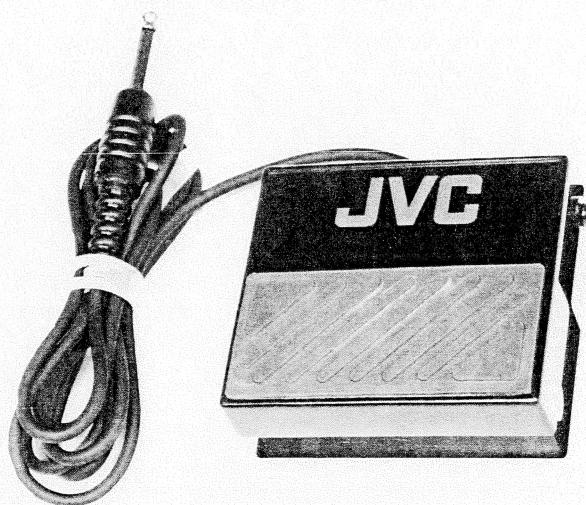
■ ET BOARD ASSEMBLY PARTS LIST

| Symbol No. | Parts No. | Parts Name | Description | Q'ty |
|---------------------|---|---|--|------------------|
| IC201 | SMK31-2 NJM4558DD QMS6312-019 QMS6303-016 | ET Board Assembly IC Jack " | External Op-amp. Microphone Foot Switch | 1 1 1 1 |
| VR201, 202 VR203 | SMV2090 SMV2080 QFM31HJ-102ZD | V. Resistor (Volume) " (") M. Capacitor | Pitch Microphone | 2 1 2 |
| | QET61AM-107Z QET61EM-106Z QET61HM-105Z " -474Z | E. Capacitor " " " | | 1 1 2 2 |

■ CC BOARD ASSEMBLY PARTS LIST

| Symbol No. | Parts No. | Parts Name | Description | Q'ty |
|-----------------------------|--|--|-------------|-------------------|
| LD1-10 D101-108 SW1-8 | SMK31-3 GL-5HD22 1S1555 SM40152 | CC Board Assembly LED Diode Tact Switch | | 1 10 8 8 |

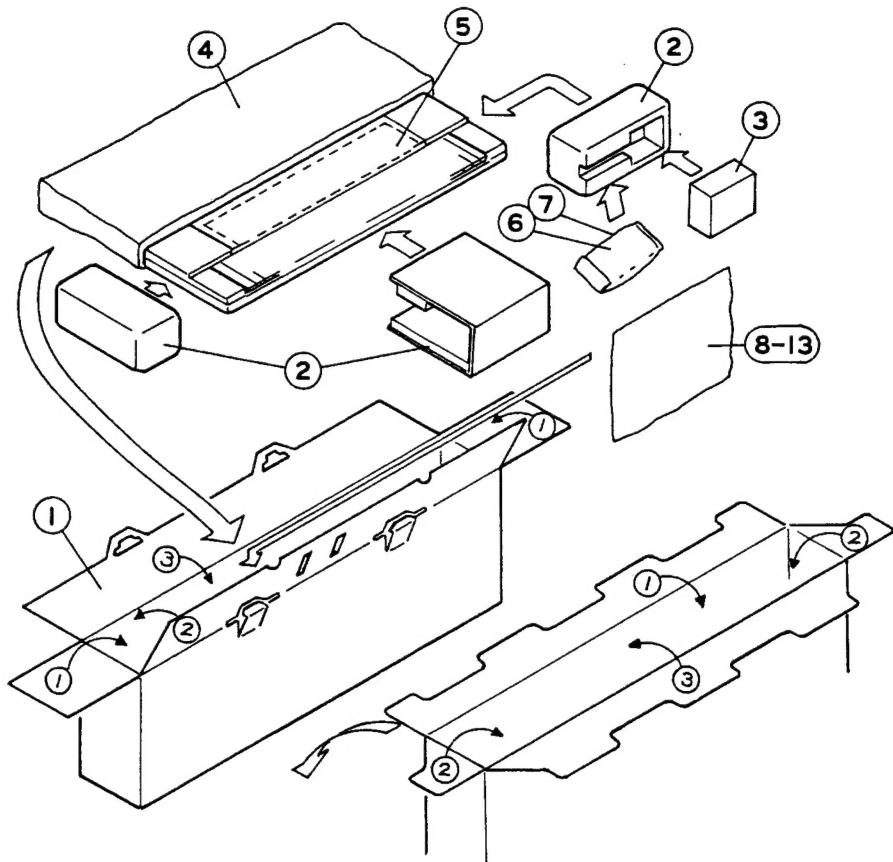
■ KF-1 FOOT SWITCH ASSEMBLY (Accessory)



PARTS LIST

| No. | Parts No. | Parts Name | Description | Q'ty |
|-----|--------------------|--------------------------|-------------|--------|
| | SMV2126 SMV2125 | Push Switch Plug Wire | | 1 1 |

Packing

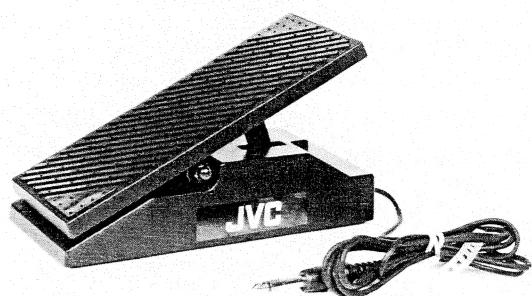


PARTS LIST

| No. | ▲ | Parts No. | Parts Name | Description | Q'ty |
|-----|---|----------------|-------------------|-------------|------|
| 1 | | PK-KB700 | Packing Case | | 1 |
| 2 | | NZ-KB700 | Packing Pad | | 1 |
| 3 | | OLSM1942 | Foot Switch Ass'y | KF-10 | 1 |
| 4 | | QPGA110-06007 | Poly Bag | | 1 |
| 5 | | PKSM100-13 | Sheet | | 1 |
| 6 | | QPGA012-03005 | Poly Bag | | 1 |
| 7 | ▲ | QMP3950-244 | Power Cord | for Model N | 1 |
| | ▲ | QMP2550-200 | " | for Model H | 1 |
| | ▲ | QMP9017-013-BS | " | for Model B | 1 |
| 8 | | SMA1074 | Song Book | | 1 |
| 9 | | SMA1083 | Instruction Book | | 1 |
| 10 | | SMA9015 | Return Envelope | | 1 |
| 11 | | SMA9017 | Owners Card | | 1 |
| 12 | | SM2766-J01 | Dust Cover | | 1 |
| 13 | | QPGA025-03505 | Poly Bag | | 1 |

Optional Accessories

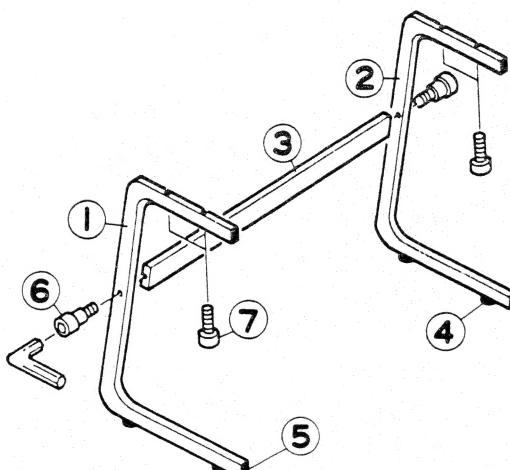
1) KX-20 (Expression Pedal)



PARTS LIST

| No. | △ | Parts No. | Parts Name | Description | Q'ty |
|-----|---|--------------------|--------------------------|-------------|--------|
| | | SMV2084 SMV2124 | V. Resistor Plug Wire | | 1 1 |

2) KS-10 (Keyboard Stand)



PARTS LIST

| No. | △ | Parts No. | Parts Name | Description | Q'ty |
|-----|---|----------------------|------------------------|-------------|------|
| 1 | | SM2747 SM2747-002 | Stand Ass'y Frame L | KS-10 | 1 |
| 2 | | " -003 | Frame R | | 1 |
| 3 | | " -005 | Channel | | 1 |
| 4 | | " -006 | Foot | | 1 |
| 5 | | " -007 | Pipe Cap | | 4 |
| 6 | | " -008 | Set Screw | | 4 |
| 7 | | " -009 | Knob Screw | | 2 |
| 8 | | SMP2079-010 | Packing Case | | 4 |
| | | | | | 1 |

3) KC-20 (Carrying Case)

JVC

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